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ABSTRACT

This four-volume report includes position papers and specifications for the elementary teacher education program of the University of Wisconsin in the year 1975 and beyond. Volume 1 includes a series of 12 position papers which cover topics ranging from teacher roles and systems approaches to instruction to control and management procedures for the continuing development and implementation of WETEP. An index to all four volumes is also included in Volume 1. Volumes 2 and 3 contain descriptions of specifications for the various elements which make up the teacher education program. Volume 4 describes the University facilities which are available or are to be made available for WETEP implementation on the campus of the University. The essential purposes of the model are (1) to improve instruction and learning through procedures which emphasize individualization; (2) to improve the quantity and quality of meaningful personal contact between faculty and students; and (3) to utilize modern technology in the accomplishment of these ends. A major feature of the project is the cybernetic systems model designed to interrelate specified behavioral objectives with effective methods of achieving them and to enable continuing refinement and development of the program specifications during the process of implementation. (ED 035 610 is a summary of this report. (Author/JES)

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UNIVERSITY OF WISCONSIN

# WISCONSIN ELEMENTARY TEACHER EDUCATION PROJECT

Volumes I-IV

February 1969

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# WISCONSIN

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A teacher education program model developed by the School of Education of the University of Wisconsin, including specifications for the undergraduate and inservice education of elementary school teachers.

An index of the four volumes included here may be found on page 167 of the first volume.

Points of view or opinions stated in this reprint represent the professional judgment of the authors and do not necessarily represent official Office of Education position or policy.

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OE-58025-Vol. I

# WISCONSIN

# ELEMENTARY
# TEACHER
# EDUCATION
# PROJECT

## Volume I: Position Papers

John M. Kean, Editor

School of Education
University of Wisconsin
Madison, Wisconsin

# PREFACE

The Wisconsin Elementary Teacher Education Project (WETEP) was initiated in November, 1967. The present report is the result of extensive efforts during the fifteen-month period between that date and March 3, 1969. Undertaken by faculty members who share the responsibility for the continuing elementary teacher education program on the campus of the University of Wisconsin, this four-volume report includes position papers and specifications for the elementary teacher education program on this campus in the year 1975 and beyond.

Volume I includes a series of twelve position papers which cover topics ranging from teacher roles and systems approaches to instruction to control and management procedures for the continuing development and implementation of WETEP. An index to all four volumes is also included in Volume I. Volumes II and III contain descriptions of specifications for the various elements which make up the teacher education program. The purpose of WETEP as a project is to further refine, develop and implement the program specifications as they are presented in these volumes and to serve as a continuing exploration and dissemination center in teacher education. Volume IV describes the University facilities which are available or are to be made available for WETEP implementation on the campus of the University. A fifth volume, titled Wisconsin Elementary Teacher Education Project Proposal has been prepared for submission to the U. S. Office of Education March 3, 1969. That proposal briefly describes WETEP and requests funds for a management and cost analysis study to be undertaken from May 1, 1969, to January 1, 1970.

The Wisconsin Elementary Teacher Education Project is an inclusive undertaking designed to create new patterns for teacher education and to assemble "The pieces of the educational revolution (which) are lying around unassembled," as John Gardner has said in No Easy Victories. Those pieces include new curricula for the schools, rapidly altering procedures in higher education, continually improving technological resources, innovative approaches which improve the quality of the relationship between student and teacher, and emphases which give continuing hope for effective individualization of instruction.

The successful development of WETEP has required and will continue to require support from a large segment of the University faculty and administration. Other resources beyond those available from within the University structure have been organized to give leadership and support to various aspects of the project. One such resource is represented by the State Department of Public Instruction and the school systems which have become a part of the enlarged cooperative WETEP effort. Radio Corporation of America and Educational Testing Service are committed to continuing support in the development and implementation of WETEP beyond these planning stages to which they have contributed in a variety of significant ways.

Ultimately the success of WETEP is dependent upon the quality of scholarship characteristic of the faculty responsible for its implementation. The University's Central Administration, the Graduate School, and the School of Education have provided support for the planning of WETEP and faculty members have contributed substantial amounts of time and effort to prepare this report as a first step toward the development of WETEP on this campus. It is on the basis of this first step that our colleagues on campus and in the schools, our partners in RCA and ETS, the administration of the University of Wisconsin, and representatives of various funding agencies will be able to make those judgments which it is hoped will provide for the continued improvement of teacher education through the Wisconsin Elementary Teacher Education Project.

M. Vere DeVault
Director

February, 1969

# FOREWORD

Volume I of the Wisconsin Elementary Teacher Education Project (WETEP) provides background information concerning basic features, philosophy, assumptions, and procedures that underlie the total program. This introduction briefly describes what WETEP is, summarizes some of the basic positions which are developed in the papers which follow, and provides a guide to the use of the papers included in this volume.

The chart presented on the next page suggests the contents of each of the four volumes in the report. A comprehensive knowledge of WETEP as it is presently planned requires a knowledge of the content in all volumes.

The position papers in this volume provide the basic rationale and foundation statements for many of the major areas of concern in the program. Twelve position papers, a paper titled "Twenty-five Questions About WETEP," a bibliography, and an index to all four volumes comprise the content of this volume. Immediately following this introduction, abstracts of the twelve papers are provided for the reader who wishes an overview prior to perusal of the individual papers. Those who have specific questions about the program may wish to turn to "Twenty-five Questions About WETEP." The abstracts and the answers to the specific questions should not be regarded as substitutes for the reading of the papers themselves. For cross reference work on any particular aspect of WETEP, the index in this volume should be particularly helpful.

The editor of this volume and the committee who worked toward its development are deeply indebted to Miss Deanne Olsen and Miss Jan Jones who provided editorial and secretarial assistance essential to the completion of this task.

John M. Kean

February 3, 1969

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| Communication: A Curriculum Focus For WETEP | Screening | Art Education | |
| Teacher Roles For 1975 | Orientation | Health Education | |
| A Cybernetic System For WETEP | | Safety Education | |
| Cognitive and Affective Levels In Teacher Educ. | Educational | Leisure Education | |
| Teacher Education and Curriculum Development | Communications | Guidance | Space Facilities |
| New Roles For University Faculty | | Physical Education | |
| The WETEP Media and Telecommunication System | Mathematics Education | Media and Technology Education | Related Educational Facilities |
| WETEP as a Research Facility | Science Education | Music Education | |
| Assessment Procedures For WETEP | | Early Childhood Education | WETEP Faculty |
| WETEP As An All University Function | Social Studies | Culturally Diverse | |
| The Role Of The School | | | |
| | | Special Education | |
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ORGANIZATION OF PAPERS WHICH DESCRIBE
THE WISCONSIN ELEMENTARY TEACHER EDUCATION PROJECT

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# INTRODUCTION

WETEP is designed to improve instruction and learning through procedures which emphasize individualization. First, WETEP is intended to improve the quantity and quality of meaningful personal contact between faculty and students. The essence of the program is embedded in the small seminars and in the instructional conferences faculty have with individual students. Second, WETEP is designed to utilize modern technology (a) to provide ready transmission of information to individual students, (b) to provide improved liaison between campus instructional activities and laboratory/clinical activities in the schools, (c) to make available to students a greater variety of learning experiences than has been previously possible, and (d) to provide for an instructional management system which organizes and transmits data relative to student progress. A major feature of the project is the cybernetic systems model designed to interrelate specified behavioral objectives with effective methods of achieving them. Finally, the project is planned to involve faculty effectively in program development, and in maintaining and in improving the WETEP system.

The planning of WETEP began in November, 1967. As the project developed, the staff realized the need for basic written statements concerning the assumptions, purposes, and working hypotheses through which they could articulate and coordinate their own efforts and explain them to others. The basic assumptions and purposes of WETEP have been developed during a year of planning, after many hours of individual study, numerous committee meetings, and three off-campus work conferences. The basic assumptions and purposes include those positions from which each individual staff member operated as he developed his contribution to the project. These statements represent a tentative consensus among staff members even though for those most intimately involved, the meanings and implications are still shifting. What will develop remains perforce partially obscure and unpredictable. This is necessary in a system which is not only open but protective of individual development. The statements, obviously preliminary and for the most part untested, have enabled the project staff to provide the direction for the future of elementary teacher education at the University of Wisconsin. The assumptions for WETEP are statements of need, belief and value. In a sense, such global views could be looked at independently of this project. Yet, it was from discussions about such statements that many of the purposes of WETEP were developed. The list of purposes then summarizes the various prototypic functions for which WETEP was developed.

## Statement of Basic Assumptions for WETEP

1. The major need in higher education is the development and maintenance of a humanistic environment for learning* for all students.

---

*The expression "humanistic environment for learning" is meant to connote a personalized environment which requires a close relationship between learners and faculty. It is not meant to imply humanism in the classical sense.

2. The quality of the humanistic environment for learning is dependent upon the nature of faculty-student contacts involved in learning activities.

3. Traditional lecture methods of instruction in higher education are not sufficient to create and maintain a humanistic learning environment in part because faculty-student contacts are rare except in large group instruction.

4. Individualization of instruction and learning can enhance the humanistic quality of educational experiences when personal faculty-student contacts are frequent, comfortable, and meaningful.

5. Personal contact between faculty and students can be focused on more significant aspects of the total learning task when technology is used to provide instructional materials in sequences and strategies appropriate to the readiness and learning style of individual learners.

6. A wide variety of learning experiences should be made readily available to learners in a manner which places major responsibility for an individual's curriculum with that learner.

7. The nature of instructional activities experienced by prospective teachers in professional education has decided impact on the nature of the instructional activities these teachers provide elementary school children.

## Statement of Purposes of WETEP

1. The major purpose of WETEP is to develop a center for teacher education which will demonstrate continually the best possible individually oriented elementary teacher education program.

2. WETEP is designed to investigate the ways in which increased teacher-student individual relationships can be enhanced by time made available through an appropriate and effective utilization of the new technology.

3. WETEP is designed to continually prepare teachers for varied roles in schools of various kinds and with children of varied cultural backgrounds.

4. WETEP is designed to facilitate closer working relationships between schools and universities both in teacher education responsibilities and in public school curriculum development activities.

5. WETEP is designed to provide a university environment in which college and university faculty re-education facilities may be developed and utilized by teacher education faculties throughout the country.

6. WETEP is designed to provide a center for the development and evaluation of teacher education materials and facilities.

7. WETEP is designed to provide a research facility oriented to the study of a wide spectrum of problems in teacher education.

8. WETEP is designed to provide a center for graduate studies in teacher education.

## Staff Commitment

These assumptions and purposes have been explicitly developed in one fashion or another in the papers of this volume. Each paper was first developed by an individual or small group of faculty and students. Draft copies were then circulated to other staff members for comment, criticism, suggestions and, as the project grew, guidance in philosophical and procedural aspects. Ultimately each paper was revised and refined to speak for a commitment on the part of the WETEP staff as a whole.

In order to ascertain what one might project for teacher education in the 70's and 80's, it was first necessary to make some projections for schools in the next decade. "Schooling for 1975," the first paper in this volume, attempts to do this. The paper, developed initially by a small group of faculty members, underwent changes as the entire staff began to realize the parameters of the task. It is the product of the whole staff rather than of any individual. The paper continues to prompt discussion among staff members and provides an initial description of one kind of school for which future teacher education programs must prepare teachers.

"Communication: A Curriculum Focus," the second paper, attempts to project a potential focus for schooling that can provide a framework for the curricular and instructional tasks which teachers will be asked to perform in the school of the future. "Teacher Roles for 1975" provides a focus for teacher education by recasting the role of the teacher in schools in light of the individualized learning environment detailed in the first two papers.

The remaining papers in the volume then discuss various factors which the staff has accepted as central to the development of a viable teacher education program given the schools, the possible curriculum, and the teacher roles specified. The fourth paper in the volume, "A Cybernetic System for WETEP: A Model Design for the Preparation of Teachers," describes a systems approach to instruction that has enabled the staff to organize, classify, and sequence the educational processes in WETEP. This is followed by "Cognitive and Affective Levels in Teacher Education," which postulates a conceptual framework for organizing various WETEP objectives along hierarchical thinking structures.

"Teacher Education and Curriculum Development," the sixth paper in the series, describes the characteristics of a fully implemented partnership between teacher education and school personnel organized to improve curriculum through in-service education. The seventh paper, "New Roles for University Faculty," identifies new patterns of staff relationships and suggests new roles for university faculty. "The WETEP Media and Telecommunications System" details a communications system which places primary emphasis on person-to-person contact between students and faculty and makes ready communication among many WETEP locations possible.

"WETEP as a Research Facility" and "Assessment Procedures for WETEP" discuss unique features of the project which provide creative assessment potentials and systematic research approaches to teacher education.

Finally, "WETEP as an All-University Function" emphasizes the role of the total university in teacher education, while "The Role of the School" describes the nature of the involvement of elementary schools in various aspects of the WETEP project.

Certainly this group of papers, indeed the papers in all four volumes, needs to be viewed as a tentative step in defining an area of higher education that has received only fragmented attention. Obviously, there are omissions in this volume. Colleagues on the University of Wisconsin campus, as well as those from around the country, will raise appropriate questions for which some answers are provided, but certainly not answers for all questions. The task has been so large as to appear overwhelming, a point oft noted by consultants to the project and colleagues on this campus. It is overwhelming! But what are the alternatives? Fragmented innovative efforts have failed to solve the essential problems in teacher education in this country. A comprehensive restructuring of teacher education as represented in WETEP provides one hope for a viable teacher education program that is meaningful for the next decade.

# ABSTRACTS

# SCHOOLING FOR 1975

Abstract. The dynamic character of the WETEP school of 1975 will result in part from the context of rapidly evolving societal problems in which it exists. These problems of society point emphatically toward the need for personalization of education. To prepare teachers competent to provide such an education is the major purpose of WETEP.

To achieve this purpose, WETEP is designed not only as a vehicle for invention, but also as a means of implementing innovations created to develop an intellectually challenging and a mentally healthy climate for the growth of elementary pupils. Education in the school of 1975 will be value-oriented to increase the pupil's sensitivity and reaction to social problems, to improve his skills in group relations, and to enhance his creative use of leisure.

Certainly the most vital element of the elementary school of tomorrow is the teacher. A shifting, but major, role for the teacher in the WETEP school will be to act as a small-group instructor, offering the benefits of mature, experienced leadership. In this role he will serve to focus upon problems, stimulate, and help to establish criteria for tentative solutions. Since machines can respond more easily than teachers to the great range of individual differences found in groups of increasing size, it is likely that the teacher's role in working with large groups may be limited to such activities as television teaching or tele-writing. A second major role for the teacher is that of tutor-challenger. In this role a teacher works with one or two individuals, helping them to discover their interests and strengths, and their weaknesses. The teacher also encourages individuals to probe more deeply into subjects that intrigue them and to sharpen their thinking about important ideas. A third, and probably the most uniquely powerful, role which a teacher can play in this school is that of learner. In this role he provides for children a model of the human being struggling to know what he does not know. The teacher is a learner about learning as he tries to make increasingly successful decisions about how to present material to children or how to encourage children to inquire.

The ability of computers to store and utilize large quantities of information about individuals provides a potential for individualized instruction. The task will be to develop a system in which three elements--teachers, materials and computers--are orchestrated so that each may make its optimum contribution to the learning process. The goal remains individualization of instruction and technology is one tool to assist in the accomplishment of this objective. One function of the computer will be to compile a diagnostic appraisal of the relevant backgrounds, abilities, interests and learning styles of each child. From these data it will be possible to propose tentative goals for each student and a program of learning experiences designed to achieve them. Another function of the computer will be instructional in nature--to facilitate information retrieval and to simulate exercises or games in practice activities.

The schools of tommorow will be media centered and computer facilitated. But it must not be forgotten that it is only in full concert with the human dimension of the classroom environment that the effectiveness of technology can be fully realized.

# COMMUNICATION: A CURRICULUM FOCUS

Abstract. Today's schools no longer need to teach literacy, but even with changes in buildings, equipment, and teachers, the curriculum has remained unchanged, focusing on mastery of academic subjects. Books and course syllabuses affect most learning behavior, the operational goals of the school being those of producing academicians at earlier and earlier ages.

Curriculum is defined as an educational plan with objectives, exemplary learning situations, and exemplary evaluation techniques. Instruction is an interaction between teachers and pupils to help the learner achieve specified objectives, which are purposeful statements describing desired student behavior in various contexts. Communications is delineated as an inter- and intra-personal process of transfer of meaning, and evaluation is description of an individual's progress toward one or more goals.

Since man is a rational, social being, knowledge should be a deeply personal means by which he can make real decisions in society as it exists for him; thus learning should be an internalized behavior change. Possessing information does not guarantee behavior change; academic matter must be justified in terms of its contribution to the ability to communicate.

The goal of communication is to direct the child in acquiring attitudes and skills in interpreting his world, and in clarifying to himself what the implications are for him and what decisions he can make. Communication is a process in application. The academic disciplines can be functional with communication as a core. The child should experience real communication with peers and representatives of the disciplines, and participate in activities where communication is essential. He should explore a variety of ways to communicate and how these ways can help him interpret "messages" from the disciplines to make decisions about himself. Through communication, learning becomes an independent means to cope with the world, an internal, personal affair.

Organized with the disciplines serving as tools, the learning situation is a six-celled structure: verbal and non-verbal modes of communication in the cognitive, affective, and psychomotor dimensions. Fragmentation of learning is reduced by the broken lines and overlapping between the six cells. Ideas from child development and other areas of study structure the sequence of the learning, and activities stress student-teacher dialogue. Evaluation occurs through questioning and personal judgment, and is concerned with the child's progress in a direction set by him; it is not a labeling process.

Instead of the child's being prepared, in the elementary years, to master the academic disciplines as expected by the high school and college, these schools should be prepared to meet him with a continuation of the communication curriculum...a plan to teach self-acceptance and effective coping with the world.

# TEACHER ROLES FOR 1975

Abstract. Innovations underway in curriculum development, in individualization of instruction, and in use of technology will be accompanied by organizational change within the schools. With these organizational changes will come potentially new roles for teachers.

Traditionally, the roles assumed by the teacher, listed in order of priority on the teacher's time, have been 1) information transmission, 2) management and administration, 3) guidance, and 4) modeling. In schools beyond 1975, it may be expected that this order of priorities will be in precisely the opposite order from that in which they are perceived in the traditional school.

Information transmission, instead of being handled almost exclusively by the teacher, will be assumed by technological aids in the classroom. The time-consuming managerial and administrative role will be increasingly assumed by paraprofessionals and instructional secretaries, aided by computers.

The guidance role will be strengthened by increasing amounts of information available about the individual learner. Improved teacher education programs as well as technology will develop in the teacher a professional competence in assessment, evaluation, and guidance procedures. As its goal, this guidance will help the student organize information about himself and the world around him.

In his most important role as a model, the teacher is seen as a learner, searching for information about learners and the learning process, and searching with the children to add to their knowledge of whatever they are studying. In the learning process by which the individual strives for self-improvement and the betterment of his environment, inquiry behaviors such as self-discipline, intellectual risk, persistence, and imagination in seeking, interpreting, and patterning data are essential. It is the teacher model who teaches by demonstrating through his own behavior a commitment to the processes of inquiry and learning.

# A CYBERNETIC SYSTEM FOR WETEP: A MODEL DESIGN FOR THE PREPARATION OF TEACHERS

Abstract. The goal of American education is to prepare young people for future effectiveness and self-realization as citizens. Providing multiple and equalitarian learning opportunities, our schools focus upon the individual learner. In contrast to other countries, American teachers bear major responsibility for pupils' achievement. The preparation of teachers is inadequate to teaching roles and duties; many weaknesses of today's schools reflect it.

Analyses of teacher education programs show they are poorly planned. A systematic analysis of teacher education can be developed by applying cybernetic theory to social organizations. Stating learnings in behavioral terms when feasible, focusing on specific objectives, and developing the means to gain them, we can postulate information systems to meet the needs of organizing, classifying, and sequencing educational processes, such as WETEP.

The WETEP cybernetic model contains four basic components. The Input component selects new candidates, the Teaching-Learning component effects desired learning, and the Output component extends the learning process by interrelating WETEP with the schools. The Feedback component supplies vital control and guidance to the entire system.

Meaningful screening at the Input stage should be developed with adequate information on student characteristics to begin a process of predicting future student success, as well as assessing the student's individual interests and needs and orienting him to the program.

The Teaching-Learning component fulfills the many programmatic and individual objectives through studies, diverse experiences, and carefully sequenced patterns of learning. Multi-media and computerized programs help provide individualized and actual learning experiences.

The WETEP system incorporates a taxonomy to organize, classify, and define what objectives are to be learned and how they can be taught. The taxonomy is a systematic arrangement of objectives-operations from basic components to elements, through subelements and modules, to the level. The level stage is the point where theoretically one objective (a "micro-criterion") is developed, i.e., where actual teaching and learning occurs. With such systematic planning, extensive flow-charting of objectives-operations with standardized symbols have been found feasible.

At the Output component, extensive clinical experiences are conducted in a truly professional setting closely involving the student, cooperating teacher, and college supervisor. Candidates' smoother transition from training to school and closer working relationship between the schools and teacher education center will be achieved through improved student-college-school relationships in more realistic and practical clinical experiences.

Information flowing in the Intrasystem channels provide immediate feedback for students' learning, progress assessment, and component development and improvement. The Intersystem channels provide reciprocal feedback between training centers and schools.

# COGNITIVE AND AFFECTIVE LEVELS IN TEACHER EDUCATION

Abstract. The organization of WETEP components is patterned after the taxonomies of Bloom and Krathwohl, et al., and built upon the concept of six levels of cognitive objectives: 1. knowledge, 2. comprehension, 3. application, 4. analysis, 5. synthesis, 6. evaluation; and five categories of affective objectives: 1. receiving, 2. responding, 3. valuing, 4. organization, 5. characterization by a value.

Another accepted assumption is that though cognitive and affective behaviors are by fact inseparable, they must be treated separately for purposes of emphasis and structuring learning. No one-to-one correspondence exists between these two types of learning, and they require different learning opportunities. Since cognitive and affective behaviors develop from simple to complex, learning opportunities differ with the complexity of behavior sought.

The cognitive domain appears to be two dimensional, i.e., operative at each level in degrees of sophistication, while the affective domain is unidimensional, i.e., not operative in degrees of sophistication.

Generally, in pre-service education, it is expected that Level 3 (Application) of the cognitive skills will be reached. But WETEP proposes an additional progression towards cognitive levels along a continuum of sophistication. It is understood that it will not be possible to move students to the most sophisticated point on the continuum at all levels. One might be required to progress to Level 3 at a very sophisticated point, or as far as Level 6 at a naive point.

Within the affective domain, in order to structure learning, the study of the way in which values are acquired is paramount. Professional studies report verbalization of values without ensuing behavioral change; affective behaviors cannot be achieved through exhortation or admonishment. WETEP educators propose to create situations for exposing students to their objectives or values. If students are to identify with individuals who operate on "WETEP values," then students must have opportunities to clarify and challenge the values of the instructor as well as their own.

A pattern of learning has been diagramed running from complete contact of student with mechanical operations to complete student-faculty contact. In all areas of teacher education, application of this pattern will produce students characterized by being both "able and willing."

## TEACHER EDUCATION AND CURRICULUM DEVELOPMENT

Abstract. The basic aspects of elementary education, i.e., pre-employment education of teachers, in-service education of teachers, and curriculum improvement have been viewed as discrete ideas. The results of this uncoordinated program have been insufficient preparation of teachers for the employing schools, inadequate in-service education to equip teachers to deal with new ideas in curriculum, and poor utilization of technological innovations.

The aim of WETEP is to foster joint and co-determined efforts by university and public school personnel to relate pre-service and in-service education and curriculum improvement. The arrangement has seven major characteristics:

1. A partnership for joint participation in programs for pre-service, in-service and elementary education with personnel roles redefined to yield the maximum contribution from all involved. A commitment would be made by all parties to develop cooperative experimental projects both on campus and at public schools.

2. The university, the public school, and the student would share responsibility for diagnosing and prescribing next steps in the individual student's program.

3. A regular, systematic, short-term exchange of teaching opportunities between campus and public school personnel would transmit new knowledge to pre- and in-service education and elementary programs.

4. Adoption of specific programs in certain public schools, such that interested candidates might have at least one laboratory or clinical experience that would allow thorough assessment of education programs.

5. Continuous dialogue between all education personnel would provide similar information and background for all.

6. All acceptable students would be required to teach their first full-time year in a WETEP associated school.

7. The recommendation for certification would be given to the State Department of Public Instruction only after one year of satisfactory teaching experience. A total commitment to cooperative involvement by the public schools and the university is the only assurance of progress in teacher education and curriculum development.

## NEW ROLES FOR UNIVERSITY FACULTY

Abstract. The university faculty must use its knowledge, skill, and awareness more effectively to be consistent with modern systems approaches to social organization. To individualize learning, the faculty must utilize multiple technological resources.

The faculty must establish professional education programs that augment the purpose of the entire university: developing moral and social commitment, and technical competence. A student-faculty partnership reached through mutual evaluation, the use of new instructional resources and increased interaction with and sensitivity to each other is essential. Each professor, encouraging criticism, inter-class visiting, student interpretation and integration of the area he has studied, exemplifies the characteristics he expects his students to exhibit.

New patterns of staff relationships will result from new roles cast for researcher-teachers, teacher-programmer, supervisory personnel, college-teaching interns, and program assistants. The university is obligated to assist the faculty in engaging in self-assessment and in-service education to improve understanding of adult learning behaviors, university teaching, and instructional functions.

As part of his new role, the professor must view positively the modern technology, conforming it to this mind-set, rather than letting it shape his mind. Insofar as evaluation is concerned, he must seek new ways to develop potential; it is not his function to limit those who would learn.

The new role of the university professor lies in examining his partnership with students and with the university and public schools.

# THE WETEP MEDIA AND TELECOMMUNICATION SYSTEM

Abstract. WETEP's formula for achieving the objectives stated in its various elements depends on the total involvement of the learner under close instructional supervision and guidance. The major communication emphasis is on person-to-person contact between students and faculty, through individual and small group conferences. WETEP also makes extensive utilization of technological facilities designed to increase the effectiveness of information transmission to students. A critical aspect in the development of such a system is the proper selection of instructional media to fit different learning objectives while meeting the individual needs of students.

Media selections will be made only after specification of the types of learning involved, the desired behavioral objectives to be attained, and the particular instructional event to occur. Media options will be examined in light of previous findings, and field-tested to verify effectiveness, economy, and convenience. Written specifications for the selection, preparation, production, and utilization of materials are all part of the development and implementation procedure. In the WETEP Program Development and Research Center, continuous study of media choice related to the individual learning experience will be maintained.

All audio-visual material will be stored in an information retrieval system on audio tape, video tape, sound film, slides, or in computer memory banks. The WETEP faculty and staff will be directly responsible for programming, development, and research associated with these stored materials.

The Teletype-Audio-Video terminal (TAV) used by students in individual carrels in the Learning Center, in participating schools, and by instructors will feature a silent teletype keyboard, television and computer video tube, headphones, and a selector switch for choosing programs. A Flexible Terminal Base (FTB) situated at the juncture of conference or office spaces will provide for optimum use of the TAV's by permitting them to rotate as needed to locations around the Base. Seminar and Media Reception Rooms will be equipped with enlarged input-output facilities (TAVe's) for group interaction. The Media Reception Rooms will also be equipped for simulated learning activities.

# WETEP AS A RESEARCH FACILITY

Abstract. An integral part of WETEP development is the provision and facilitation of research in teacher education. The systems model enabling the faculty to manage the flow and specifications for all parts of the program will make possible precise, sophisticated research design.

The broad parameters of WETEP concern student selection in the establishment of professional objectives, in instruction strategies within WETEP modules, and in pace and sequence of progression in learning activities.

WETEP research will identify the implementation patterns of a systems approach to teacher education that can most efficiently organize and interrelate the many learning and instructional tasks. WETEP will also study the effects of using objectives statements in a variety of forms, coupled with research on the degree to which students can self-select, self-direct, and self-pace these learning objectives.

Assuming that the developmental direction taken by technology in teacher education should be one concern of the professional educator, WETEP staff will study the relationship of technology to the effectiveness of its educational efforts.

A major feasibility study of WETEP is concerned with the viability of an unfolding university-business relationship fostered through research and development in education.

WETEP proposes to determine over a period of time if some kinds of cooperating school-university relationships are more feasible for some types of schools than others, and which relationships make in-service education the most effective adjunct to teacher education. The length and character of the internship program, as affected by technology, WETEP instructional modules, and the systems approach in defining objectives, represents another major feasibility study.

Two dimensions of the faculty role to be researched are the faculty serving in the guidance capacity and as models--two roles which take increasing priority over the administration and information transmission roles.

The entire WETEP faculty realizes that any program which emerges from WETEP specifications can expect to meet with periodic success only as it develops under continuous careful scrutiny of a concerned staff.

# ASSESSMENT PROCEDURES FOR WETEP

Abstract. Viewing present testing programs as static both in goals and function, WETEP emphasizes the use of tests as diagnostic and prescriptive tools. A proposed six year program of research and development in the area of Computer Assisted Testing (CAT) has four interrelated purposes:

1. To further develop the body of theory and method in computer-assisted testing.
2. To develop computer-assisted testing materials and programs for each WETEP component.
3. To provide continuous and individualized feedback for the WETEP student.
4. To assess the extent to which the behavioral objectives of WETEP are attained by individual students and the system.

The basic research on the design and evaluation of sequential tests will include investigation in three major areas: the structure of sequential tests, item types and formats, and response types. Several branching and item selection procedures will be evaluated under the first major heading, such as, the optimal number of branching points, item selection for maximum information, and appropriate weighting of items.

The focus under the second major heading will be the use of items requiring an interactive exchange between the student and the machine. Non-multiple choice items and different types of feedback will be evaluated for effectiveness, and the use of incorrect responses for diagnostic purposes will be field tested. The usefulness of decision rules and student attitudes and motivation will be examined.

The third major area will encompass explorations and evaluations of additional response information and response types that are facilitated by computer-assisted testing techniques; confidence ratings, the use of subjective probability, and response latency are a few sources to be explored.

Evaluation will be concentrated on test reliability, parallel form reliability, modified internal form consistency, and validity.

As progress is made toward the goals of the proposed program of basic research, the most efficient of the computer-assisted testing techniques will be used in the operational implementation of the project.

# WETEP AS AN ALL-UNIVERSITY FUNCTION

Abstract. The entire University of Wisconsin faculty is responsible for the quality of teacher education. The organization of the School of Education involves all University faculty who teach courses taken by teacher education students. This faculty includes 1076 professors from 61 different departments, with the School of Education providing over-all administration. All departments provide leadership in developing specialized policies that affect them. Active participation is encouraged to build a sound program balanced in liberal education with specialization in subject fields and teaching skills.

The WETEP student will begin with two years of study within the College of Letters and Science. His next two years will be devoted to combining specialized study in professional and non-professional education and to an intensification of the professional elementary teacher education program.

The WETEP areas of specialization will be individually designed cooperatively by the student and his advisor in areas such as science, communication, learning, or assessment activities. The instruction making up the area of specialization will include a combination of modules developed within WETEP and related courses in appropriate disciplines. Specialization in science, for instance, will include study within the WETEP science element beyond that required by all students and might also include such courses as meteorology, geology, astronomy and geography.

The result of the University-wide participation in this program is the preparation of a teacher with a strong general academic background, an area of specialization, and an understanding and competence in the area of professional education, all of which provide a base for continued educational activity throughout his professional career.

## THE ROLE OF THE SCHOOL

Abstract. The output component of WETEP is located in the decentralized network of cooperating schools. This organization must be reconsidered for several reasons. The output component at times precedes or interrupts the teaching-learning component because of disarrangement of the student's four year education program. Feedback loops between the student, school, and campus are often disoriented, preventing diagnosis and prescription from functioning effectively in providing an individualized instructional program. The schools do not benefit, the institution gets little information for improvement, and the students do not receive effective preparation.

WETEP views in-service as only the beginning of the total output component, which encompasses the entire professional career. Three models for public school participation are planned. All provide for intern placements, for improved communication, and for effective feedback. Plan I involves those ten school districts which hold membership in the school consortium, Midwest Individualized Learning Systems. The schools are involved with the University portion of WETEP in the cooperative development of curriculum planning to provide for individualized programs throughout the school.

The faculty is characterized by its flexible organization, having released time for cooperating with the institution's intern program, and for using University resources. WETEP is involved to the extent of maintaining contact, sharing resources and personnel, providing in-service education for teachers, and guiding the pre-service program. The participating schools benefit by curriculum development, instructional management, faculty education, and use of technological equipment. Under Plan II, the WETEP telecommunications system will provide instructional resources for both interns and in-service teachers. Each school district will maintain a Professional Education Room, which will be equipped to facilitate two-way communications with the University. Plan III suggests the use of mobile classroom vans, possibly in conjunction with a supervisor-visitation program.

An alternative plan utilizes the entire last year of the teacher education program as a paid internship. During the first semester, the student acts as an instructional aide. He also works in methods or educational psychology areas offered via the telecommunications system. During the second semester, the student serves as a full-time teacher-intern.

The in-service program in associated schools is provided in part through the WETEP telecommunication system, with instruction being highly individualized with personal assistance and guidance by WETEP specialists.

Each of these plans offers a continuing relationship with WETEP. Pre-service and in-service education become a unified teaching experience prepared cooperatively by the public school and the University.

# POSITION PAPERS

## SCHOOLING FOR 1975

Staff

### Changing Society

Attempts to plan for schooling in the future are usually based either on projections of various trends in our society or upon the creative imagination of those who believe that about all we know of the future is that it will be much different from the past and present. Projections growing out of our post mid-century society point to a highly technological world in which schools as we know them today may disappear with the coming of the Twenty-first Century. Goodlad[1] foresees the possibility of a community learning center providing individual homes with access to computer-controlled video-tape, microfiche, record libraries and national educational television networks. He suggests that in this sense it is "...possible that advanced technology will return the family to center stage as the basic learning unit."

We can best think of patterns for schooling in 1975 as dynamic in nature and occuring in a society which is rapidly moving toward a population in the year 2000, 6.4 billion people in the world, 3.18 million in the United States alone. This society will be increasingly urban. The problems of schooling will be part of a much larger total context in which solutions to the problems of housing, transportation, recreation, and business are rapidly evolving.[2] Changing patterns of transportation and technology will make the interchange of learners with the four corners of the world a reality.

The Wisconsin Elementary Teacher Education Project school is the school of this transition period, changing as society changes. As difficult and challenging as are the technological, organizational, and financial problems facing those who would change patterns of schooling for the young, the most difficult task is that of determining alternative goals for schooling. Today's age-grade oriented schools force a conformity of expectations and goals for all youth. Success in school is determined almost exclusively in terms of the learner's capacity and will to conform to those goals which have been established for all youth. These goals are most readily met by students whose verbal abilities are in the upper percentiles. The school curriculum is subject matter oriented and success is determined in terms of how much one knows of science, or literature, or history.

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[1] Goodlad, John I., "Learning and Teaching in the Future," National Education Journal, February 1968, pp. 49-51.

[2] See Kahn, Herman, and Wiener, Anthony J., The Year 2000: A Framework for Speculation on the Next Thirty-three Years, New York: Macmillan Co., 1967. Also Morphet, Edgar L. and Jesser, David L., Designing Education for the Future Volume I, Prospective Changes in Society, New York: Citation Press, 1968.

Are these goals adequate for a new society? One of man's characteristics is sociality. This sociality requires a personalization through intimate, meaningful ways of working with people. Avoiding the impersonal school is an absolute necessity in a new society gilded in technology. Ammons[3] has suggested that the core of elementary schooling ought to be training in communication skills--the process in which one individual intends that a particular meaning be grasped by another, and in which others grasp the intended meaning. Communication is essential to the maintenance of the fabric of our society in both communal and individual living, yet it may be one of the activities in which we engage with the least skill. Ammons suggests that the disciplines be used as means to the end of improved communication. Then areas of study--reading, mathematics, social sciences, the arts--will contribute to the child's ability to cope with his world on his own terms.

## WETEP and Schooling for 1975

Effective schooling, then, will have to become more relevant to the learner's continuing and future needs. Yee[4] argues that "educational planning...needs to be concerned with bolder projections into the future to specify educational strategies today." The goal of WETEP is to create a climate for the development of those characteristics which may have even more importance for the citizens of the future than for those of the present:

1) Values-oriented rather than materials-oriented

2) Sensitive and reactive to continuing social problems

3) Sufficiently people-oriented and skilled in group relations to meet the demands of high population densities, of increased international and regional travel and trade, and of relations with culturally different peoples

4) Creative in the use of leisure time

5) Involved in occupational roles, especially those of a specialized service nature, demanding more education, greater mental and intellectual competencies

6) Sufficiently oriented to scientific-technological developments and processes to appreciate and recognize their contributions and limitations

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[3] Ammons, Margaret, "Communication: A Curriculum Focus," ASCD--EKNE Conference, A Curriculum for Children: The Scene and the Dream, January 12, 1968. See Ammon's adaptation of this paper elsewhere in Volume I.

[4] Yee, Albert H., "Preparation for the Future," The Social Studies, January 1968, p. 25.

The WETEP school will become less and less the school we now know as our concerns for schooling necessarily become broader than a single building or a single institution. Even though Goodlad[5] has indicated that "The challenge now is much less one of inventing than of implementing the several powerful and viable innovations that have appeared during recent years," it is anticipated that the WETEP school will be a blending of present innovation with the creative efforts of staff members throughout the WETEP community including the university, the schools, and industry.

## Role of the Teacher and Other School Personnel

Certainly the most vital element of the elementary school of tomorrow is the teacher who serves as instructional leader. A shifting, but major, role for the teacher in the WETEP school will be to act as small-group instructor, offering the benefits of mature, experienced leadership. In this role the teacher will serve to focus upon problems, stimulate and encourage tentative solutions, and help to establish criteria for solutions. Since the range of pupil differences increases as the group gets larger, and since machines can respond more easily than teachers to this variety, it is likely that the teacher's role in working with large groups may be limited to such activities as television teaching or tele-writing.

A second major role for teachers in this school is that of tutor-challenger. In this role a teacher works with one or two children, helping individuals to discover their interests and strengths, and their weaknesses. The teacher also encourages individuals to probe more deeply into subjects that intrigue them and to sharpen their thinking about important ideas.

A third, and probably the most uniquely powerful, role which a teacher can play in this school is that of learner. In this role the teacher provides for children a model of the human being struggling to know what he does not know. The teacher is a learner about learning as he tries to make increasingly successful decisions about how to present material to children or about how to encourage children to inquire. In addition, however, the teacher is a learner in the content area in which he and children, with or without other adults, propose to inquire. In this latter role the teacher and his pupils attempt to add to knowledge in the content area they are studying, as well as to acquaint themselves with the heuristic ideas and conclusions which scholars have produced.

Keeping in mind the major goal of providing for individualization of instruction to the greatest degree possible, the organization of teaching personnel must be geared to meet this objective. Of the many variations of team teaching which have been proposed or put into practice, one that seems of special relevance to the aims of the school of the 1970's is the teaching unit concept.

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[5] Goodlad, John I., Op. Cit., p. 49.

In a typical elementary school of 500 to 600 students, approximately four units might replace the usual 20 to 30 self-contained classes. Each unit may be comprised of a unit leader, two or more certified teachers, two or more interns, one or more noncertified aides (paraprofessionals) and the students. The unit leader is responsible for the instructional program. The certified teachers, operating as a unit rather than as teachers in self-contained classrooms, carry out the major share of the responsibility for coordinating the instructional resources of the school. The noncertified personnel perform a variety of secretarial, management and other school-related activities under the leadership of the unit leader and teachers.

Teachers within the unit are given opportunities to exercise special interests and special aptitudes, not only in subject matter areas but also in class management and organizational processes. Such specialties could include those of personal tutor, resource manager, instructional programmer, and organizer of teaching interns and paraprofessionals.

The study and development of appropriate roles for teachers who will provide personalized attention to individual students must be an essential element of any projection for schooling in 1975.

## Facilitative Learning Environments

Historically, perceptive educators have made use of new knowledge in proposing and carrying out changes in the schools. It is now possible, however, to apply much of the information accumulated over the years about learning, teaching and evaluation in a more systematic way than has been previously possible. To serve the needs of individual learners, an orchestration of elements--including diagnosis, prescription, instruction, counseling and evaluation--can be directed to the achievement of educational goals.

A personalized style of education--a truly individualized approach to instruction--can be made possible with the aid of seemingly impersonal stores of data, as facilitating technological equipment is made available to an instructional staff.

Individualization, then, is a key goal in designing the new elementary school. When objectives are outlined, it is important to specify them in behavioral terms: what the learner must be able to do, the manner in which and the circumstances under which he must do it, and the competency he must show in performance. But it also is vital that goals be tailored to individual differences of children. These differences may be expressed in background and in experience, in ability and in aptitudes, and in styles and rates of learning.

This combination of immensely complex considerations which are part of the educational process might understandably prompt many to regard the space scientists' efforts to put a man on the moon as a relatively uncomplicated task. But human learning is a complicated matter because it is so highly individualized. Not only do we recognize that human beings learn in different ways, but we are committed to honoring the entire spectrum of unique qualities possessed by each individual. Our strategies for instruction and for organization of the new school must be built around respect for the individual child, for his uniqueness and for his potentialities to grow toward independence.

How can modern technology serve as a tool in accomplishing this goal of freeing the elementary school from the constrictive bonds of uniformity in order to best serve the individual needs of children--needs which demand personal contact, personal encouragement, and personal experience?

The ability of modern electronic computers to store and make use of large quantities of information about individuals creates a potential for individualized instruction. The task will be to develop a system in which three elements--teachers, materials and computers--are orchestrated so that each may make its optimum contribution to the learning process. The goal remains individualization of instruction and technology the tool to assist in the accomplishment of this objective.

One function of the computer may be to compile a diagnostic appraisal or assessment of the relevant backgrounds, abilities, interests and learning styles of each child. These data may then propose the identification of tentative goals for each student and a program of learning experiences designed to achieve these goals.

Another function of the computer may be instructional in nature--to facilitate information retrieval, to simulate exercises or games, and to provide limited use in practice activities.

The computer's information retrieval capacity enables children to make selective use of vast accumulations of information in searching for answers to their questions. Because the computer also can be used as a problem-solving tool, a child can simulate or play actual problem-oriented games which permit him to make realistic choices about complex situations.

Skill areas such as reading, spelling and arithmetic lend themselves to the computer's capability for managing drill and practice exercises and for providing nearly instantaneous confirmation or denial of student responses. In these situations, the teacher is freed from repetitive tasks and given more time for individual attention to students and for creative instructional activities.

As children exhibit the vast differences in learning rates of which they are capable, the teacher finds it extremely difficult to keep track of individual progress, proficiency and problems. Here the computer serves to measure the child's progress and to help identify the objectives he has achieved, the kind of help he might need and the choices he might exercise that would be most beneficial to him. The computer also is able to produce statistical summaries of a child's work as either he or the teacher may require it.

A computer-assisted instructional plan brings flexibility to the classroom. Because students are able to proceed through instruction at their individual speeds, the amount of time a child spends on a particular topic can be shortened or lengthened according to his need.

The entire range of instructional media, from talking typewriters to conventional textbooks, offers decision-making challenges about effective usage. A systems approach which optimally employs teachers and machines, helps assure that these media are used to maximum effectiveness. A multi-media approach to instruction provides new opportunities for individualization through facilitating personal choices dictated by the child's own interests and needs.

Dial-access television, film and slide presentations, programmed and conventional texts and conventional instruction by teachers can be used singly, in combination, or in a varied pattern to make possible a diversified approach to the process of teaching and learning.

The schools of tomorrow will be media-centered and computer facilitated. But it must not be forgotten that it is only in full concert with the human dimension of the classroom environment that the effectiveness of technology can be fully realized. Jackson, in his treatise The Teacher and the Machine, reminds us forcefully that "...our most pressing problem involves learning how to create and maintain a humane environment in our schools.....Opaque projectors.... computer consoles may help in the process, but they will not substitute for a firm sense of direction and a commitment to the preservation of human values."[6]

## The Challenge for Teacher Education

Any proposal for schooling in 1975 must inevitably involve a creative and effective melding of teacher, materials and technology in a way which optimizes personalized opportunities for pupils. Imaginative planning is imperative now for a vastly different kind of schooling, for a vastly more rewarding educational experience for all children in 1975.

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[6] Jackson, Philip W., "The Teacher and the Machine," Pittsburgh, Pennsylvania: University of Pittsburg Press, 1968, p. 90.

# COMMUNICATION: A CURRICULUM FOCUS FOR WETEP[1]

Margaret Ammons

This paper falls into four parts: General Background, Definition of Terms, Basic Assumptions, and A Communications Curriculum. In any one of the sections much of what is set down is sheer assertion or assumption, although the statements may not be identified as such. Where curriculum is concerned, there is no viable alternative. The case is as tight as the author can make it. Hopefully, this reasoning will be exonerated by the end of the paper.

## GENERAL BACKGROUND

The first assertion is "The elementary school as we know it is largely the product of historical accidents." That is to say, the graded school for children roughly five or six to eleven or twelve was not a result of national studies or assessment, nor careful experiments regarding child growth and development, nor an adoption or revision of what knowledge is of most worth, nor surveys to determine the most pressing needs of children in the given age bracket. The critical dates in the history of the elementary school in its entirety need not be cataloged here. Some few changes have most assuredly occurred. The changes, however, were not the result of the kind of thoughtful inquiry and introspection to which educators should be pleased to admit. Rather, decisions regarding the elementary school have been taken in response to such questions as "What will we do with rapidly increasing numbers of children?" And thus grades. "Then what will be studied in each of these grades?" Thus, graded textbooks and graded teachers. Not one of these decisions was responsive to searching questions which appear relevant to children.

Given such decisions, it was then attempted to justify them after the fact as in the following statement: "The best basic unit of organization yet devised is the self-contained classroom in which a group of children of similar social maturity are grouped together under the extended and continuous guidance of a single teacher."[2] At the time,

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[1] Adapted from a paper presented at the ASCD - EKNE Conference, "A Curriculum for Children: The Scene and the Dream." January 12, 1968. Reprinted by permission. c1969 by Association for Supervision and Curriculum Development, NEA. All rights reserved.

[2] Association for Supervision and Curriculum Development. The Self-Contained Classroom. edited by Edith Roach Snyder. Washington, D.C., 1960.

there were no other basic units of organization in sufficient numbers to have made a thorough-going comparative study which would allow such an assertion to be made.

Furthermore, programs established on such bases as described above have been maintained in essence in spite of data which point to something other than the present elementary school program and organization. Perhaps most critical, however, is that while educators have tinkered with such elements as flexible buildings, team teaching, computers, nongrading, and the like, the curriculum has remained in essence the same.

The curriculum, or in general those things which have been proffered to children to learn, has not changed. When the trimmings have been peeled away, what remains as the core around which the curriculum is built has remained unscathed for decades. One piece of evidence for this is a number of studies conducted in response to charges that schools of the 50's were not doing as well as schools of the earlier part of this century. In spite of the fact that modern educators claimed to be doing something different, in which case they should simple have said, "You're right, we're not trying to do the same thing," they hastened to haul out tests which would measure in 1953 what the tests were initially designed to measure in 1933. If there is no difference between 1933 results and 1953 results on tests designed to measure 1933 performances, it would appear on the surface that whatever happened to children in 1953 was at least similar to what happened in 1933; that is, happened to them in terms of learning opportunities.[3]

Once upon a time, schools were faced with the task of making members of our society literate. Initially, this meant the three R's. Slowly literacy came to be defined to include, in addition, possession of science information or social science information, for example. That is, subject matter "mastery" somehow augured success and literacy. Obviously, the school was the place where such mastery should occur. Supposedly, however, educators' expressed purpose now is somewhat different from sheer literacy. We speak of producing persons who possess such commendable attributes as critical thinking, or analytical abilities, and appreciation of the humanities. Yet the studies we have available reveal two rather unsettling pictures of what transpires in elementary classrooms. First, teacher classroom behavior is determined more by textbooks than by any other single factor.[4] Second, approximately

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[3] Y. V. Miller and W. C. Lanton. "Reading Achievement of School Children--Then and Now." Elementary English, XXXIII, February, 1956.

[4] D. Gilmore. "A Critical Examination of Selected Instructional Practices." Unpublished Ph.D. Thesis, Michigan State University, 1963.

90% of teachers' questions require no more of the learner than that he recall some specific piece of information or that he be able to put someone else's idea into his own words.[5]

Despite aspirations and claims to the contrary, what actually happens in elementary classrooms, at least in large numbers of them, puts a ceiling on what children are expected to do. And ceilings are placed in the traditional subject areas. When children are graded they are typically graded in terms of subject areas, with some attention given to such other factors as the quality of their citizenship and their effort. But these are often judged as children function in subject areas. Additionally, a rapid survey of statutory requirements regarding the elementary school program reveals that such requirements are typically set down in terms of subject matter to be taught and the amount of time to be spent per week in certain areas. Thus, mastery of subject matter, or literacy, is still the operational goal in elementary education. Earlier, the expressed goal and the operational goal were the same, and a program appropriate for their attainment was developed. Now, there is a basic discrepancy between expressed and operational goals; the program is reflective of the operational, not the expressed goal. The reasons for this situation constitute an interesting problem for exploration, but such explorations are beyond the limits of this paper.

Thus, while change is desired, school organizations are altered, dividing the child's school world into the same subject areas which have been the basis for schooling for decades. Further, with such notable exceptions as the work of Suchman,[6] the new curriculum projects have been developed within the framework of disciplines or academic specialties. The apparent objective in some such projects has been to make better mathematicians, or better scientists, or better historians, or better users of the mother tongue, of elementary school children.

The question which cries for thoughtful consideration is whether the goal of the elementary school is to prepare young children for more adequate performance in the academic disciplines at later educational stages by earlier and earlier concentration on the disciplines or whether the purpose of the elementary school is something quite different. In the author's view, the purpose of the elementary school is not to create academicians at earlier and earlier ages.

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[5] F. J. Guszak. "A Study of Teacher Solicitation and Student Response, Interaction About Reading Context in Selected Second, Fourth, and Sixth Grades." Unpublished dissertation, University of Wisconsin, 1966.

[6] J. Richard Suchman. "Inquiry Training in the Elementary School." The Science Teacher, 27, November, 1960, pp. 42-47.

## DEFINITIONS

Let me now turn to the definition of some terms which will recur and upon whose definition much of what is to follow hangs. There are five such terms: curriculum, instruction, communication, objectives, and evaluation. By curriculum is meant an educational plan which includes a statement of objectives, a description of exemplary learning situations, and a description of exemplary evaluation techniques, the latter two designed in relation to objectives. This plan is drawn for a group of learners for whom the planners have responsibility as for example, all the children in a school district.

Instruction in this context is defined as the interaction between teacher and pupil or pupils which is intended to assist the learner toward the achievement of specified objectives.

Communication here is a rather simple-minded concept. It is not burdened with the theoretical constructs of communications specialists, though such specialists have much to contribute. Here communication is defined as a two-way process in which one individual intends that a particular meaning be grasped by another or others, and in which others grasp the intended meaning. It is acknowledged that the word "meaning" is also fraught with ambiguity and various philosophical and psychological over- and under-tones. To use the word "message" would create similar difficulty. It certainly is possible to "talk" to one another minus communication, to wit; two gentlemen on a Thursday evening were rocking on the veranda. As the crickets chirped and a choir rehearsed in the church across the street, one said to the other, "Don't they make beautiful music?", to which his friend replied, "And to think they do it by rubbing their hind legs together." Finally, communication is highly intra-personal and inter-personal.

Objectives are statements of purpose which describe the desired student behavior and the content in relation to which the student is to behave. Objectives have as their function guiding teachers in selecting appropriate learning situations and evaluation techniques. Parenthetically, both behavior and content are defined in very broad terms here.

Evaluation is intended to mean a description of an individual's progress toward one or more objectives. So much for terms.

## BASIC ASSUMPTIONS

He who makes recommendations operates upon a set of assumptions whether he does this consciously or not. The recommender must share his assumptions so that the receivers will have some basis for accepting or rejecting the recommendations. If one disagrees with the most basic assumptions, then it would be logically difficult for him to accept what grows from the assumptions. On the other hand, if one shares the assumptions, he might see ways other than those the speaker suggests of achieving the same objectives.

First, there is a set of assumptions about the nature of man, the knowable, the good society and man's relation to it. From these, hopefully grow some assumptions which relate directly to elementary education.

First, man is rational. Man can see alternatives, and can choose among them. Further, rationality in man means that man does not act capriciously, whimsically (without intending to do so) or without some justification which to him simply makes sense. That is, man behaves with reason. Even further, man can learn to increase his ability to act with reason, to improve through his own power his grounds for choosing. Man desires to improve, has the courage to improve, is curious and enthusiastic about things which have meaning for him. And finally, man is a social animal, requiring direct and vicarious human contact and response for survival.

Second, much is knowable which cannot be accounted for through the usual interpretation of the five senses. One can know what it is like to be lonely or happy, but he knows this in a way that is probably different from the way he knows that something is blue, or hard, or sweet, or true, or harmonious. If this is so, then what teachers offer to a learner to know must include knowing in many ways. Knowledge, then, cannot be limited to what is measured by responses to a paper and pencil test, or what is read from a book. What is acceptable as knowledge, and therefore, knowable, must allow for emphatic knowing, for sensitivity to another's perceptions of occurrences. It means that much of worth is known without any intervention or awareness. Learners do come to know without teachers. Knowledge and knowing is a means, not an end. Finally, knowing and thus learning is deeply personal for each individual.

The good society is one in which man is free to choose, to make of himself what he will, to participate in the business of living according to his own lights. It is one which encourages the independence of mind and spirit, which does not bend humankind to its own ends, however magnanimous these ends may be. It is the society which provides the context for freedom of choice of the individual and the preservation of the society in which the individual lives. The individual, in turn, has the obligation to behave as a human being, with the capacity for choosing, with the ability to add to his store of knowledge, in the broadest sense, those factors which will allow him to become what he potentially is, and to contribute to the good of all. It is the society which exists for the individual as he lives with others, not one for which the individual exists. It accords to the individual the ability to make his own decisions.

The foregoing represent only a brief summary of some of the questions which teachers must answer for themselves as they contemplate the task of educating the young. These assumptions, or this value position, give rise to some further assumptions regarding elementary education, important in the Wisconsin Elementary Teacher Education Program.

1. The purpose of elementary schools is not to prepare a child for "a" or "the" next step in the sense of "getting him ready" for first grade or sixth grade, or high school, or college.

2. The best preparation for "next steps" is success at tasks in curricula which are valuable and relevant to a learner wherever he is.

3. Instruction and the plans for it derive or should derive from the curriculum of a particular school system, or district.

4. The schools must define their curricula in terms of something which hopefully is relevant to the elementary child as he is.

5. Performing is different from learning--performing is a short-lived change in behavior displayed in order to meet some external standard. Learning is a persistent change in behavior displayed because the individual has "internalized" it or because he values this way of behaving sufficiently to make it characteristic of his behavior patterns.[7]

6. Currently in elementary education, as elsewhere, performance rather than learning is emphasized.

7. Possession of information does not guarantee a permanent change in behavior.

8. The study of academic subject matter for its own sake does not guarantee an "educated" individual, or one who has learned.

9. Mastery of academic subject matter is currently and in fact the end of elementary education. Evidence for this assumption is the fact that success or failure of individuals is determined in part in relation to this criterion.

10. Conditions are changing so radically and rapidly that educational needs of elementary children as defined in the past are no longer relevant.

11. Academic subject matter can in fact become the means, not the end of education.

12. Given conditions and evidence, it can be asserted that communication is relevant at any point in a human's life.

13. Academic subject matter can be justified in the curriculum as it contributes to the individual's ability to communicate.

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[7] M. P. Ammons. "Do We Really Want Students to Learn?" Oregon Foreign Language Newsletter, October, 1967.

14. To change the essence of the elementary curriculum, the pattern of thinking and talking about the elementary curriculum must be altered.

15. As long as the elementary program is segmented--without some unifying theme--the assertion that one needs to see the world as a whole piece is denied. Given the present-day education, the only place where there is the opportunity for a child to participate in learning related to his own world is the elementary school. Snygg describes one aspect of this situation.[8]

> We can assume that each external event is perceived, if at all, in such a way as to cause the least possible change in the student's field. The words of a lecturer will only rarely be relevant to the private reality and personal problems of the students he addresses and are very easy to ignore. The usual plan for overriding this implacable mechanism for protecting the student against the instrusion of dissonant perceptions is to disorganize his field by threats of failure and humiliation in the hope that he will try to remove the threat by learning the required material. The results are frequently far from what teachers and parents intend. All teachers are by now aware of the cheating and the defensive changes in self-concept and personal values that may result among "poor" students. More attention should be given to the problems of the "good" student who learns the required material for examination purposes but keeps it from entering and changing his view of reality by dividing his field into two parts, "reality" and "school," the latter having nothing to do with real life. This is the game that has given the word "academic" its connotation of impractical futility. The bright people who have used this defense and made a success of school without changing their concepts of reality feel more competent in "school" than in "real life." Apparently many such persons become teachers. We often see teachers and children playing the school game together, equally unaware that the concepts they discuss have nothing to do with life or action.

## A COMMUNICATIONS CURRICULUM

Given all the foregoing, where does it lead? Obviously, not to one and only one kind of elementary education, but most assuredly it suggests something essentially different from what is now available or even what is currently proposed by both educators and concerned non-educators. What follows is a justification for a curriculum and the skeleton of the curriculum which the author proposes as more responsive to the child and his real world. While this curriculum is one more consonant with beliefs about children and the purpose of education, the questions whose answers suggest or at least allow this curriculum are perhaps more important than the program itself. That is, it seems a more fruitful task to identify those questions which, when answered, lead to a curriculum more carefully considered than a curriculum developed as one is typically developed. Therefore, the curriculum is more an illustration of a process in application than it is a full-blown description of a program or a curriculum. Many of the questions have already been identified or implied.

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[8] Donald Snygg. "A Cognitive Field Theory of Learning," Learning and Mental Health in the School, Association for Supervision and Curriculum Development Yearbook, Washington, D. C., 1966, pp. 77-98.

Justification. In order to justify a curriculum, any curriculum, one must clarify his concept of the purpose of education. Earlier it was denied that implicitly or explicitly that simple literacy is an acceptable purpose if it is the main or only purpose. Also rejected was the purpose of elementary education being that of preparing an individual for any next stage of education. The purpose of elementary education is not to teach the child to think as does a scientist, a mathematician, or any other scholar in any other discipline. The reasons for such rejection are probably obvious from what has been said to date. Literacy as the end of education can be rejected because it restricts the view held by the child of himself and his world. Preparation for next stages can be rejected because, in the main, any stage of education has been artificially and arbitrarily determined; thus such preparation is also artificial and arbitrary. Having the child think as does a scholar can be rejected because at the level of the elementary child, it is presumptuous to pretend that he is capable of such activity, in any real sense. Further, to assume that one child can think in the pattern of some seven to nine different scholars is to think unrealistically and perhaps undesirably. On the other hand, to force a child as innocent and immature as the elementary school child to choose his discipline at the elementary level is to violate several basic assumptions. First, it denies him the opportunity to become sufficiently acquainted with his world so that his choice will be informed and the one most suitable for him. Inherent in this then, is the danger that the choice will be made for him, for some motive related to something other than his individual welfare. Furthermore, to place such emphasis upon the disciplines is to make them become ends in themselves rather than means to be used by individuals for their own ends.

From these assertions, an acceptable purpose of elementary education is probably emerging. In the vaguest or perhaps broadest terms, the purpose of elementary education is to assist the individual child to cope with his world as he finds it. Such coping involves understanding. A major part of that understanding is to be able to interpret accurately those stimuli he receives through the five senses; included here are stimuli to the emotional or affective "senses." More specifically, the purpose of elementary education is to help the child acquire the attitudes and skills he needs to interpret his world and to clarify to himself what the implications for him and for his own choices might be. As an individual with the characteristics described earlier, it is more important at this stage of his development to understand his world in his own terms than to behave in the mode of a scholar or scholars in any or all disciplines. The term for this kind of interpretation is communication.

The reason for suggesting enhancing the child's ability to communicate rests upon the apparent facts that (1) communication is essential to both communal and individual living; (2) that it may be one of the activities in which we engage with the least skill;[9] that maintenance of the fabric of our own society may be dependent upon communication.[10] Sanger suggests that political violence may well grow from discontent, and that one factor which may affect what happens is a gap in communications between the ruling group and the discontented. Further, given individual differences, it seems likely that each of us may communicate effectively in only a small number of media--language, body movement, painting, and the like. For example, when some 110 children were asked how many different ways they could think of to help someone understand what they meant, almost without exception they relied upon words as the medium. We fail to exploit many media as means of communication, thus reducing the possibilities for any one individual to choose the medium most appropriate for him and the particular message he is intent upon sending, or receiving.

In any case, communication can be viewed as a legitimate core around which to plan the program of the elementary school so that areas of study may contribute to the child's ability to cope with his world on his own terms, or to increased and sharper communication. These areas of study--reading, mathematics, social sciences, the arts--can become functional as means rather than as ends. If one speaks of the needs of children as a factor in organizing the elementary school, one need to which the school can turn its attention in a unique fashion is communication; for it would appear that the elementary school is the agency which can utilize the "disciplines" in helping children to sharpen their communication. Since communication appears to be a need which will exist far into the future, and a need which exists at any level of development, it seems appropriate to posit as the basis for organizing the elementary program.

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[9] Ladislas Farago. The Broken Seal. Random House, 1967.

[10] "Is Insurrection Brewing in the U. S.?", an interview with Richard H. Sanger, author of Insurgent Area, U. S. News and World Report, December 25, 1967, pp. 32-37.

With such an overall purpose, each child would be given the opportunity to

1) experience real communication with peers and with representatives of the appropriate academic disciplines;
2) participate in activities where communication is essential to the individual in acquiring what he wants;
3) explore a variety of ways and means for getting across to the others; particularly ways which he has not explored heretofore;
4) examine what ideas may be most appropriately communicated through the language of the different disciplines;
5) conversely, examine the role of mathematics, drama, music, in communication;
6) interpret the "messages" from the various disciplines and to use such messages in making decisions about himself, his world, and his relation to it;
7) examine feelings, his own and those of others, to explore how these are communicated among humans, and to comprehend the effects of feelings among humans;
8) in general, to increase sensitivity to his own communication as well as to the communication of others.

If these are at least some of the parameters of a curriculum with a communications focus, what comprises the substance? Time does not permit a detailed specification; however, below are listed the objectives which appear to be essential for elementary education, some description of organizing elements which bind the curriculum together, some illustrative activities, and evaluation techniques which allow some judgment regarding the progress of individual children.

Objectives. There are four major objectives for the elementary school child: 1) that he be able to make wise choices regarding his own behavior in a radically changing social context; 2) that he acquire the tools which allow such wise choices; 3) that he become increasingly independent in his learning; and 4) that he value learning as a means of coping with his world. Given the necessity for learning to be a personal and individually internal affair, and given the definition of communication, then communication is the key to the contribution which the elementary school can make to the individual child.

Elements. The organizing elements which run throughout the curriculum can be set forth with a verbal diagram. Imagine a two by three table; that is three columns and two rows, six cells. Across the top are three types of behavior; down the side are two types of activities.

Although there are many ways to categorize human behavior, e.g., Guilford or Gallagher-Aschner, the work of the committee of University Examiners and the home economics group at the University of Illinois are the most useful and presently the most comprehensive.[11] These groups have described human behavior as having three dimensions: cognitive, affective, and psychomotor. No claim is made that these are absolutely discrete, but rather that any given behavior is more of one type than of the other two. No claim is made either that these descriptions are final, but they are helpful in talking about what is possible in terms of human behavior. So, across the top of the diagram place these three terms.

One way to discuss the way in which these behaviors are put into operation is modes of behavior. The term is intended to distinguish between _types_ of behavior and the way in which one _uses_ each behavior. The modes which seem most appropriate in the present context are verbal and non-verbal. Down the side of the diagram, then, place those two words.

Given this arrangement, it is possible to talk about engaging in behavior in either a verbal or non-verbal way. Thus one may speak of verbal-cognitive behavior, verbal-affective behavior, verbal-psychomotor behavior, and non-verbal affective behavior, non-verbal cognitive behavior, and non-verbal psychomotor behavior.

These are the elements around which the program is to be built. The next major task is to determine what broad categories of school-room activities can be developed to allow the child to participate in the various types of communication, and how they might be arranged both horizontally and vertically, a rather difficult consideration.

_Organization_. One of the major problems in the program of the elementary school is fragmentation or splitting of the child's academic world into unrelated parts. Perhaps what will be suggested is simply another type of fragmentation. The focus, however, is sufficiently different and exhibits sufficient unity at least to reduce the problem.

Over the years there have been attempts to relate horizontally all the aspects of the elementary program. These attempts have included the integrated curriculum, the fused curriculum and the core curriculum, among others. The present solution sounds similar to aspects of each of these, but the intent is different. The intent is to relegate the disciplines to the level of tool rather than something to be dealt with for its own sake. Lest any interpret this as anti-intellectualism; it can be contended that the most intellectually respectable activity in which a child can engage is that of relating to his world in such a way that he can fulfill the objectives suggested earlier.

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[11] Mary Jane McCue Aschner. "Meaning and Thinking," _Language and Meaning_, Association for Supervision and Curriculum Development, Washington, D. C., 1965.

Now, what kind of horizontal organization makes sense for the elementary school child who is exposed to a curriculum built around communication? It is not relating or attempting to relate the instructional areas as they are presently structured to communication. That is, there is no concern with maintaining the present boundaries of the subject areas. If it should occur in the process that language arts, as this area is currently construed, is most useful in the form now taught, then it should be retained in that form. However, the major concern is that the program be organized so that children have opportunities to engage in verbal-cognitive hehavior, so that some aspects of language instruction would be essential. Such instruction, however, would be in relation to a type of communication rather than in relation to mastery of an area of study.

Another example of horizontal organization may be taken from mathematics. This field is in the making and will have significant impact upon the world of children. The contention here is that for the elementary school child, understanding the contribution of the various areas of scholarship to his own personal world is more appropriate than becoming a master of the field itself. Thus, learning what the mathematician has to say to the individual, learning how these ideas are expressed, and grasping the implications of mathematical ideas is to be emphasized. Further, since non-verbal-cognitive behavior is one of the elements to be stressed throughout the curriculum, opportunities to wrestle with the area of non-verbal symbolism become relevant and crucial. To illustrate, mathematical operations are not the only contribution made by the field. In Wisconsin, if one says the number 15, something exciting is communicated. Or if one is a Cub fan, then the number 14 is significant. One kind of communication is non-verbal-cognitive, and it seems that restricting children's exposure to the symbols typically associated with mathematics to the study of mathematics qua mathematics is limiting their opportunity to develop their sensitivity to the ideas communicated most appropriately through non-verbal symbols.

Another form of communication is non-verbal-affective. According to those who have tilled the field of affective behavior in general, this is the most neglected in the schools. Yet many assert that unless and until the affect is involved, little learning of a permanent nature will occur.[12] If then, teachers are concerned with the affective behavior of elementary school children, they must design the curriculum to account for such behavior. Since by definition communication of any kind necessarily involves the affect, then non-verbal-affective behavior is legitimate and necessary. What this implies for the classroom is a study of the "silent language" described by Hall.[13] It involves work with ballet, pantomime, and other vehicles for communicating feelings to others. It involves offering children the chance to explore their own feelings, how they communicate these to others, and how they can be increasingly certain that they are accurately interpreting the feelings and messages of others.

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[12] Snygg, *op. cit.*

[13] E. T. Hall. *The Silent Language*. Doubleday and Co., Inc., 1959.

If verbal-affective behavior is under consideration, we could turn to the general semanticists. A study done with sixth-grade children showed among other things that children of that age could deal with ideas in general semantics and that they found such involvement exciting.[14] There is some reason to think that the materials used in that study could be adapted for younger children if this were desirable.

Looking, then, at horizontal organization, imagine a circle containing smaller, overlapping circles formed with broken lines. These six circles represent the six types of communication: verbal-cognitive, verbal-affective, verbal-psychomotor, non-verbal-cognitive, non-verbal-affective, and non-verbal-psychomotor. The large circle represents a slice from the total curriculum which may be thought of in this context as a cylinder. The area surrounding the six smaller circles contains the ideas from academic areas along with whatever additional ideas are needed to complete the curriculum. It should be noted that the smaller circles are of broken lines and are overlapping, suggesting that at least theoretically fragmentation is reduced, and that appropriate aspects of areas of study feed directly into one or more types of communication, with the types of communication forming a whole.

Vertical, or over-time organization of the curriculum requires a different approach. Whereas horizontal organization accounts for what is now called scope, vertical organization is concerned with sequence. Two major sets of ideas must be brought into relation in determining sequence. These are ideas from child development and ideas from areas of study. (Note the shift in terminology from discipline to areas of study.) This, it is hoped, will sidestep the present trap of a disciplines curriculum, as was mentioned earlier. Rather, teachers and teacher educators need to look to areas of study to determine what ideas from each area are relevant to the various types of communication. This may be a distinction without a difference, but the intention is a difference.

It should be noted that the six types of communication run throughout the entire program, and that each will always receive either major or minor emphasis depending upon the developmental level of the child. The two modes of behavior available are verbal and non-verbal. Included in the verbal mode are the usual oral, written, read, and heard. Early in the child's school career, almost all emphasis should be placed upon the oral, spoken and heard, moving to read and written only when the child has almost done it himself. This would apply across the board to all three types of behavior. Urgent attention, however, would be given to the non-verbal mode in all types of behavior at all points along the curriculum. The purpose of this progression is to allow the child to become increasingly proficient in the types of communication with which he is already familiar, assuming that more attention can be paid to the quality of his communication and his ability to interpret his world than if he is forced to use a type of communication with which he has to struggle.

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[14] Sally Ralston True. "A Study of the Relation of General Semantics and Creativity." Unpublished dissertation, University of Wisconsin, 1964.

The foregoing illustrations give the general idea of the direction in which one might move in building a curriculum. To make the intent hopefully more clear, some specific classroom examples are included. Were one writing a curriculum for the use of teachers, he would describe such activities solely for the purpose of making clear the intent of the curriculum, not to prescribe what teachers do with their own children.

Activities. First, classrooms would be characterized by talk, not silence, and the preponderence of such talk would be by children--among children and between children and the teacher. Where one now has reading groups, he would find discussion groups, painting groups, dance groups, drama groups, listening groups. While there would be a professional teacher present, other adults would play a major role in the elementary school. Who can better discuss the language of the dance than someone who is in dance as a professional? Who can better help children to see what scientists are trying to say to the world than a scientist? Who can better explain the contribution of mathematics than the mathematician? Who can better help children understand the language of the fields than the scholars in the field? The role of the teacher becomes that of mediating for individual children and helping each child make personal use of what he has gleaned from the specialist.

Such activities require teachers who are skilled at ferreting out with each child the meaning of all such activities--teachers who honestly ask children questions which allow children to see for themselves what something means to them and for them. These are simple-minded questions which go something like this: What do you mean? Why does it mean that to you? How do you know? How do you feel about it? What difference does it make to you that you feel that way rather than another? What seems important to you? How do you think you come to know something? Why? Does this add to anything you already have found out? Does it make something more clear than it was before? Does it make you feel better about yourself? Do you now feel more comfortable about things than you did before you had the talk with the gentleman about matter and energy? Conversely, children will be asking similar questions of each other and of teachers.

As children acquire facility with spoken and heard language in communicating, they may work toward such facility with the written word--their own and those of others. The necessity for dialogue with other children and with the teacher does not decrease, however. For now, children need to be asking of what they read the same questions teachers have been asking of children. The time at which this becomes appropriate will differ for each individual child. The determination is made on the basis of what is known about the child, not upon such an extraneous measure as how long he has been in school, nor upon some astrological grounds as the number of years he has been alive or in what month he was born.

Other kinds of activities are relevant to other kinds of communication. As already mentioned, the performing arts offer children the opportunity to see themselves and what they have to say to the world in a different light, different from the light shed upon themselves when they are limited to communication with words. Creative dramatics gives a chance for "talking with" others in a unique way. And this talking lets others see an individual in a way he may not be able to demonstrate with verbal language. Sports of many types can be drawn upon in the same way and for the same reasons.

Evaluation. Evaluation techniques are more critical in the WETEP curriculum than they have been in the past. The term evaluation here means a description of progress of an individual child toward specified objectives. Through questions and discussions teachers will be collecting evidence to let them know whether children are increasingly able to cope with their world on their own terms. Teachers will be able to tell whether and in what ways a child needs something in particular--stimulation, sympathy, a sensitive ear, a group opportunity, or solitude--in which he may struggle with an idea with which he is involved. The core of the techniques to be employed is sensitive observation by teachers of individual children and thorough, comprehensive record keeping. It should be noted here that there is an important distinction to be made among evaluation, grading and reporting. The latter two are based upon the first, and therefore related to it. But grading and reporting are not synonymous with evaluation.

The point of stressing evaluation is concern with a child's progress, not with the development of categories for him to fit or labels for him to wear. True evaluation is a learning experience for the child and is not judgmental. Nor is it used to threaten or cajole, or to elevate, or to make odious comparisons. It has as its purpose assisting each child to grow in whatever direction has been set by him, or with him. It is to gather information with and about each child so that he may see himself in relation to goals of which he is at least aware.

A simple illustration might help clarify this point. Suppose that a physician were brought to a classroom to discuss his field with children. The teacher knows each child well. During the discussion she observes each child, but in all likelihood with a different purpose for each child. She makes a careful record of the amount and nature of the interaction and communication of each child. This information will be used in subsequent discussions with the child to chart his next moves. This is evaluation.

## CONCLUSION

Certainly all the foregoing has implications for teaching and instruction, for school organization, for buildings, for non-professional personnel, for materials, for deployment of teachers and pupils. These, however, go much beyond the scope of this paper's purpose. It is important to note that these latter considerations follow, not precede, the establishment of a purpose of education and the curriculum.

It is also critical to keep constantly in mind that a curriculum, as the term is used here, is nothing more than a plan. It is also nothing less. For years in education there has been the assumption that some relation exists between curriculum and instruction. Richard Hawthorne has developed a model which allows us to examine the extent and nature of this assumed relation.[15] His own study reveals that in a special case of both curriculum and instruction, this relation is at best tenuous. Therefore, it is essential that teachers not rely upon plans, no matter how well-done, to make the changes so vitally needed in elementary education. For that matter, one cannot rely upon plans in any case. It is this problem that allows one to investigate the necessary relation among curriculum, instruction and supervision.

There will be many reservations about this or any other major change suggested for the direction of elementary education. One of the most common is that children will not be prepared for any one of a number of things: junior high school, high school, college, a vocation. This is not the problem of elementary educators. It is the problem of the junior high school, the high school, the college, the vocations. These institutions are not prepared for individuals who are learning to live in the world.

The author has tried to construct a curriculum that is way out and to justify it. Perhaps the job could have been done in four sentences. (1) The job of the elementary school is to start each child on the road to accepting himself and to coping successfully with the world in his own way, on his own terms. (2) The present program of the elementary school cannot do this job. (3) To construct a program that holds promise of allowing the elementary school to do the job, educators must change the essence of the way they think and talk about the elementary school program, and not simply try to make the same old things over into a new image. (4) To build a new elementary curriculum which is relevant and real to the child requires untold intellectual courage, as does any change in the face of opposition.

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[15] Richard Hawthorne. "A Model for the Analysis of Teachers' Verbal Pre-instructional Curricular Decisions and Verbal Instructional Interaction." Unpublished dissertation, University of Wisconsin, 1968.

# TEACHER ROLES FOR 1975

B. Robert Tabachnick and M. Vere DeVault

Innovations underway in curriculum development, in individualization of instruction, and in the use of technology in the schools are accompanied by new patterns of school organization. Team teaching, the ungraded school, modular scheduling, and unitized schools are all examples of organizational change designed to improve the context in which instruction takes place. These new patterns of organization are associated with new roles for teachers. It may be anticipated that those activities which today occupy a major portion of the teacher's time will not have the same priority on his time in schools after 1975. New activities and new responsibilities for teachers may be expected to evolve.

Before considering these potentially new roles, a review of the roles which teachers presently assume is in order. These, in order of priority on the teacher's time, may be listed as:

1. Information transmission
2. Management and administration
3. Guidance
4. Modeling

Information transmission. Perhaps the most important and the most time consuming role of the teacher in elementary school has traditionally been that of providing learners with information. Teachers in traditional schools have performed this function by telling children or with the assistance of books and occasionally with films and other audio-visual materials.

Management and administration. The second most time consuming task is that of management and administration. Included in this role are such activities as moving children from one activity to another, arranging instructional materials, making assignments, testing and grading papers, collecting milk money, keeping records, buckling galoshes, and keeping track of the physical education equipment to be used at recess.

Guidance. The guidance function, a relatively minor one in the traditional classroom, includes teacher-student conferences, incidental responses to the individual student as a teacher observes his progress, and evaluation of pupil efforts on a long-term basis.

Modeling. Finally, what the teacher is and what the teacher does plays an important role in the total instructional environment. In the traditional classroom, the importance of this role has been too often overlooked or at best recognized through the emphasis given the traditional values of orderliness, the use of appropriate speech, and other amenities of social interaction.

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In schools beyond 1975 it may be expected that this order of priorities for teacher roles will be in precisely the opposite order from that in which they are perceived in traditional schools. Teachers will serve primarily as models and as guidance counselors and only incidentally as managers and administrators. They will seldom serve as processors of information to be transmitted to learners (Figure 1). The increased use of technology in the performance of many routine responsibilities now assumed by classroom teachers will make it possible for teachers to focus on aspects of modeling and guidance.

In schools beyond 1975 information transmission can be almost exclusively assumed by technological aids in the classroom. A human role essential in this function may be that of production of instructional materials. It may be anticipated that the role of the professional teacher in this component of the instructional setting will be of significantly decreasing importance in the years ahead.

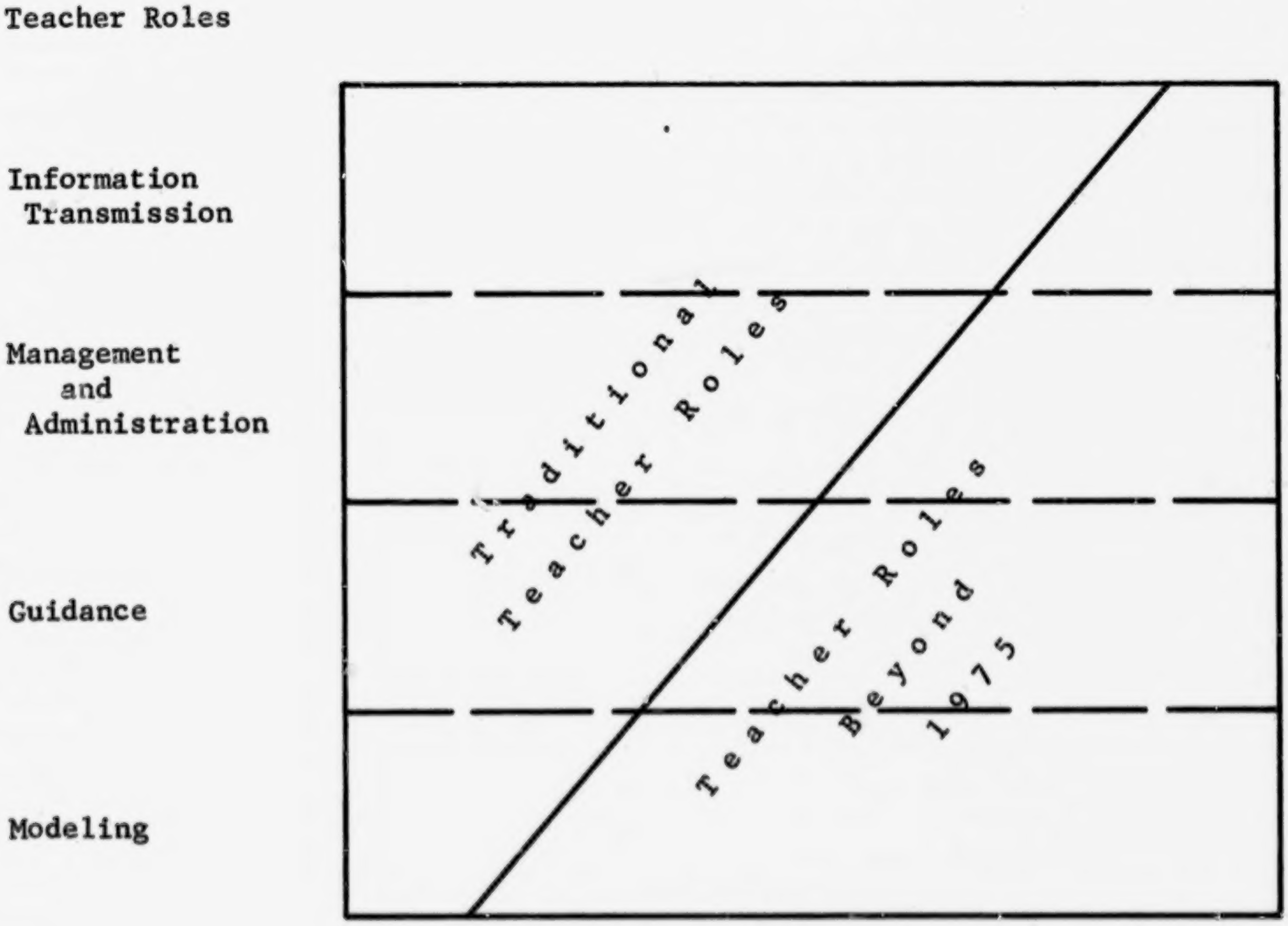
The management and administration roles presently assuming a major proportion of the classroom teacher's time will be increasingly assumed by paraprofessionals and instructional secretaries assisted by various computer applications of classroom management systems and administrative routines.

The guidance function of the teacher will come into its own for a number of reasons. First, computer technology and various improvements in measurement and evaluation techniques will be substantially improved and will provide the teacher with increasing amounts of information about each individual learner. Second, time devoted to relatively routine matters of management, administration, and information processing in the present school will be available in schools beyond 1975 for conferences and interviews with individual students. And third, teacher preparation programs will be substantially altered so that due emphasis will be given the development of professional competence in the realm of assessment, evaluation, and guidance procedures.

The guidance role will help the child make sense out of his learning experiences by helping him organize information about the world around him and by helping him organize information about himself.

As instructional guides to individuals and groups, teachers will work to challenge children to combine and organize information about the world around them in order to create hypothetical intellectual structures which are open to test and analysis.

In organizing information about himself the pupil is helped to become increasingly independent in diagnosing his own learning difficulties and strengths and learns how to remedy the one and capitalize upon the other.


Teacher Roles
Information Transmission
Management and Administration
Guidance
Modeling
Traditional Teacher Roles
Teacher Roles Beyond 1975

Change in Teacher Roles from
Traditional Patterns to Those
in Schools Beyond 1975

Figure 1

The profound changes which have taken place in our society since the beginning of the 20th Century will continue and intensify. Young people who begin teaching in the early 1970's will find their world increasingly urbanized. The rhythm, pace, and problems of that urban world are the ones for which a relevant teacher education program should prepare teachers.

Traditionally, teachers have been inadequately prepared to understand that what happens to children before school and after school is intimately related to what can happen to them during school. The effectiveness of the teacher of the 1970's will depend upon his understanding of the total social environment in which children live and go to school: the life styles, values, frustrations, joys, opportunities, excitements, and routines that block or enhance the development of human beings who can become positively involved with their society.

Finally, the teacher's most important role is identified as that of a model to be emulated. The teacher is seen as a learner. He is a learner inquiring in two directions. First, he is searching constantly for more information about learners and learning as he tries to make increasingly successful decisions about how to encourage children to inquire. Additionally, he is seen by pupils as a learner searching with them to add to their knowledge in whatever discipline they are studying.

For humans, learning is an essential part of being alive. Being alive is more, in the human experience, than simple existence; it is a process of becoming better. Learning plays an essential part in this process by which individuals become better people, and by which a society becomes and maintains an increasingly more humane environment.

As a teacher wrestles with problems together with his pupils, he will model for them the kind of inquiry behaviors they will be learning. Self-discipline, intellecutal risk, persistence, imagination in searching out sources and interpreting and patterning the data collected--all of these will need to be evident in the teacher's behavior as he strives, together with his pupils, to develop answers to real questions, questions whose answers he does not have and about which he is genuinely curious. The teacher as a model revokes the image of someone who teaches instead of doing. This teacher model is someone who teaches by demonstrating through his own behavior a commitment to the processes of inquiry and learning.

# A CYBERNETIC SYSTEM FOR WETEP:

# A MODEL DESIGN FOR THE PREPARATION OF TEACHERS[1]

Albert H. Yee

## Why Is Teacher Education Important?

Among the many possible ways to improve American elementary and secondary schools, teacher preparation remains the most critical and yet least developed area. Because a professional field can be no stronger than its first-line practitioners, investment in up-grading teacher education could provide far greater returns in producing educational improvements in schools than investment in other areas of education.

It has been said that the central purpose of American education should be promoting the preparation of each individual for future effectiveness and self-realization as a citizen.[2] That objective, it is reasoned, stems from traditional American values such as those extolling the unique worth and dignity of the individual and the potential rationality and perfectibility of man.

Viewing educational expenditures and enrollment figures in the United States as evidence for public commitment toward education, there seems to be no question that Americans value education highly. The cost of supporting education is second only to national defense in overall tax expenditures. In 1967, about 2.01 million teachers taught about

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[1] Expanded from: Yee, A. H. The preparation of teachers: A cybernetic systems approach. Journal of Research and Development, in press. This paper may not be altered, cited, or quoted without author's permission.

[2] Graham, Grace. The public school in the American tradition. New York: Harper & Row, 1963.

Kimball, S. T., and McClellan, J. E. Education and the new America. New York: Random House, 1962.

Special Studies Project, Rockefeller Brothers Fund. The power of the democratic idea, Report VI. Garden City, New York: Doubleday, 1960.

Special Studies Project, Rockefeller Brothers Fund. The pursuit of excellence: Education and the future of America, Report V. Garden City, New York: Doubleday, 1958.

50.2 million students attending Grades K-12 in American public and nonpublic schools. The great growth of America's educational enterprise becomes clearer when it is noted that 1.16 million of those teachers taught in elementary schools, which represents an increase of about 270,000 over 1957. Also, 1967's total public expenditure of over 30 billion dollars for K-12 education doubled that spent in 1957.[3]

In outlook, few Americans would agree that schooling carries value only for an elite group; the consensus seems to be that the more education a person has, the better it is for him and society. In fact, the most outstanding feature of education in the United States continues to be its attempt to provide equalitarian and multiple opportunities for all students. This feature contrasts sharply with the elitist and restrictive characteristics of other societies' educational programs.

The French, for example, begin a selective process of restricting the number of students for advanced work at about age 11. As teenagers, most French children have been barred from the prestigious educational track and channelled into vocational programs. By emphasizing a narrow, prescribed curriculum and the hurdles of national examinations, France graduates from the lycée (university preparatory schools) only two percent of the school-age population equivalent to that in our high schools.

In France, the student bears major responsibility for his learning and needs to prove his intellectual worth as he progresses through the French educational system. In the United States, the teacher carries no less responsibility for school achievement than the student; in fact, it is often implied that teachers, especially those in elementary schools, bear the major responsibility for pupils' learning. The American ideal perceives schools as providing for students multiple opportunities to achieve, change, and show promise. Thus, universal secondary education is often taken for granted, and higher education is becoming a more practical reality today for all those who desire it. One other significant feature distinguishing American from French schools is that major control of schools is in local hands in the United States, but schools are primarily controlled by the central government in France.[4]

The validity for the American system of education, therefore, depends on the assumption that universal schooling can satisfy the diverse needs of all individuals. One's belief in the American educational system as one of man's finest expressions of democracy and of faith in the worthiness of the comman man requires this assumption. Yet the question can be raised: Is the present American system of education successful in fulfilling such an assumption? As the reader is well aware, the question has been debated quite a bit in the last two decades. Many critics have charged that classroom operations are typically inferior in quality and irrelevant to societal needs.[5] Recently, severe criticisms have focused upon inadequate educational programs for the needs of disadvantaged children, and such charges continue to rage.[6] Most of the critics, however, have attacked adminstrators and teachers for not providing the teaching-learning operations they can and should, rather than calling for European-type programs. Attempts toward reform and improvement continue to be developed mainly through the belief that teachers can improve their classroom operations when necessary. Thus, the new science and math curricula developed after Sputnik assume teachers' capability to adapt and improve their classroom work.

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[3] Simon, K. A., and Fullam, M. G. Projections of educational statistics to 1974-75. Washington, D. C.: U. S. Government Printing Office, Document No. FS5.210:10030-65, 1965.

[4] Graham, Grace. The public school in the American tradition. New York: Harper & Row, 1963.

Since it is so solidly assumed that the great and varied teaching-learning effects required by universal education can be accomplished, it follows, therefore, that the schools of America must be staffed by professionally competent teachers and administrators. In this perspective, the great responsibility of teacher preparation centers to the total educational enterprise becomes more clear. It should not be surprising, therefore, that some critics have directed their attacks beyond the schools to the professional preparation of teachers.[7]

As the chief source of certified teachers, the schools of education (which number over 1,200 today) have been blamed for most of the faults such critics perceive in American schools. In his two year investigation of teacher education in this country, Conant[8] suggested that much of what is known as teacher preparation be overhauled. Conant's report raised great controversy when it was first released and continues to appear in discussions of teacher education, however, its actual effect upon schools of education has been almost nil. Perhaps the main reason for this lack of operational impact is because Conant did not fully recognize that improvements in the preparation of teachers could not come about without the establishment he chastised, primarily the teacher educators. His harsh criticisms tended to harden existing beliefs and promote counteracting responses, despite some very insightful recommendations.

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[5] Conant, J. B. The American high school today. New York: McGraw-Hill, 1959.

Mayer, M. The schools. New York: Harper, 1961.

Scott, C. W., Hill, C. M., and Burns, H. W. The great debate. Englewood Cliffs, N. J.: Prentice-Hall, 1959.

Yee, A. H. Preparation for the future. The Social Studies, 1968, 59, 18-26.

[6] Kohl, H. 36 children. New York: New American Library, 1967.

Kozol, J. Death at an early age. New York: Houghton Mifflin, 1967.

Riessman, F. Teachers of the poor: a five-point plan. Journal of Teacher Education, 1967, 18, 326-336.

[7] Bestor, A. E. Educational wastelands: The retreat from learning in our public schools. Urbana, Illinois: University of Illinois Press, 1953.

Sympathizing with many of the faults Conant and his associates found in teacher education, this writer feels that present programs cannot fulfill their obligation to prepare professionally qualified teachers without revolutionary program changes. Seeing no practical alternative to college and university teacher preparation, however, this writer feels it is important to consider what teacher educators can do to improve their professional programs rather than unrealistically suggesting they disband and fade away. Teacher educators, however, have neglected their unique professional responsibility to this country's educational system as discussed above. To re-emphasize the point, the chief responsibility for teacher education is the preparation and certification of qualified, competent professional teachers for the schools of the country. As we shall now attempt to show, inadequate planning and conflicting objectives have been common hinderances in the progressive development of teacher preparation programs.

## The Importance of Planning Educational Design

In the design of complex educational programs, such as those for teacher preparation, someone must become involved with planning and the extent of planning that will be necessary. Normally, the problem is met in terms of the educational objectives to be pursued and the processes by which they are achieved. More specifically, there are many concerns, such as dealing with admissions requirements and application procedures, course sequences, evaluation, and placement after graduation. As the number of students in the system increases, these concerns tend to become oriented toward institutional rather than personal demands. Thus, there are many ramifications in the design of educational programs requiring some degree of planning for organization and some concern for relevance. Conceivably, there is a tremendous range in the detail to which planning will be pursued in any institution, from none to the utterly ridiculous spelling out of each behavioral move, such as sitting down and lifting a pencil. Neither extreme seems likely nor sensible for any permanent social organization, but alternative positions between them can be found that warrant study.

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[8] Conant, J. B. The education of American teachers. New York: McGraw-Hill, 1963.

Let us examine a common course of action that lies somewhere between the two extremes. Planning for teacher education programs can be assessed by examining descriptions of such programs in college and university course catalogs. Catalogs inform readers of basic matters, such as course requirements, alternative program options, and areas of specialization. Seldom is there extensive program development operating beyond what may be gleaned from catalog descriptions. When the program was initiated, wordy designs were probably drawn for the examination and approval of review boards and higher authorities, but somehow the course catalog description became the actual operational design as time passed.

Limited planning of a design provides much room for uncertainty and inefficiency, because the practical objectives they focus upon become sequences of courses, or even courses without sequence, which students take for "academic" credit and subsequently complete with grade-level ratings of performance. In this approach, the briefly described courses can vary from professor to professor, since they do not identify exactly what criterion behaviors are to be developed, rewarded, and maintained. What the students are expected to learn and how they should perform after completing the courses are seldom specified in behavioral terms. Often the manner in which students are evaluated with examinations and papers and have their progress recorded does not bear much relationship to their future classroom behavior.

Some justification for limited planning can be found in the nature of higher education which gives professors considerable autonomy and freedom to teach courses as they see fit. The traditional route to professional success through scholarly works other than teaching also helps explain why present conditions exist. Whatever the explanations may be, however, the existing conditions in the design of teacher education programs are often contradictory and irrelevant to the proper preparation of teachers. Lest we be misinterpreted, the issue we raise here is the necessity of proper educational planning of institutions for teacher preparation, not the academic freedom of professors, etc. It would be interesting to discuss the likely conflicts in the various key functions of academic life, but we will not do so here. Suffice it to say that this writer's point of view is that professors' and teachers' academic freedoms should not be abrogated in any way. In order to provide better educational programs and avoid possible contradictions in objectives and role conflicts, new adminstrative structures and personnel roles may need to be developed.

In typical teacher education programs, the several sections for a methods course can and probably do differ considerably. The problems of present-day programs become more clear when we attempt to ascertain the effects of teacher preparation upon their graduates. Since programs today are highly limited in their specification of behavioral objectives and the development and evaluation of the means to attain the objectives; they are notably lacking in controlling the type of product they graduate and send to schools and pupils.

Millions of dollars and years of human endeavor have been expended in the operation of teacher education programs that have vague designs based heavily on administrative rather than teaching-learning planning. Intelligent planning by professors for effective teaching and learning in education courses is hardly rare. But the planning we find lacking is in the overall structure of each course, its meaningful relationship to other courses, and the design of the whole program for achieving clear and certain objectives.

Thus, the planning needed to develop and continually improve an educational program depends on the program's objectives. Because the objectives of teacher preparation have been equivocal and often unrelated to teaching youngsters, the programs have lagged and meandered. Such problems may be most outstanding in teacher education, but they are not unique to this professional field; critical analysis of other professional areas of study on campuses would probably reveal many similar problems. To merely say that the objectives of teacher preparation are to "prepare effective teachers" seems to be begging the question. Stating objectives for an institution only in global, philosophical terms creates uncertainty, for the vagueness of such objectives can only lead to uncertain planning and designs.

Objectives should be clear and definite enough to allow development of specific procedures to attain the objectives. Stating what is to be taught and learned with a minimum of ambiguity and equivocality becomes the first major step toward intelligent planning of an educational program. It may be possible, however, that specification of all objectives cannot be completed when planning is started, especially in developing innovative programs. In such cases, the delineation of objectives may need to be held in abeyance until objectives may be specified in the future. A developing educational design may resemble a skyscraper in construction. Thus, completion of a design, as it is for a building, properly occurs after the objectives or purposes have been formulated and specified.

For those inclined to find behavioral approaches and systematic programming anathemas, we might agree that there are humanistic and philosophic areas of concern in education perhaps better left as they are. WETEP is based on the assumption that many effective and so-called "humanizing" objectives could be dealt with very well in behavioral terms today. Reliable knowledge in such matters lags behind what we know about cognitive processes and skills development. However, there are many relevant learnings, skills, and patterns of behavior that can be systematically handled in education, as this paper has attempted to describe.

The present state of curriculum and instruction is far from advanced, as this paper attempts to indicate with the specific example of teacher education; however, education is hardly destitute of tested theories and methods upon which planners can build and improve their educational systems. It is easy to immobilize progress by lamenting the problems and uncertainties. It is harder to propose procedures for effective change. Applying reason and purpose to their pursuit of progress, learned men in advancing areas of endeavor have found systematic planning, development, and evaluation beneficial to understanding past and present conditions and improving them for the future.

B. F. Skinner[9] recently observed:

> ...when we know what we are doing, we are training; when we do not know what we are doing, we are teaching. Once we have taken the important first step and specified what we want the student to do as the result of having been taught, we can begin to teach in ways with respect to which this outworn distinction is meaningless. In doing so we need not abandon any of our goals. We must simply define them.

## A Cybernetic Systems Model for WETEP

Social organizations, such as teacher education centers, contain the potential for the four basic components of cybernetic systems:[10] 1) an input component providing for selection and entrance of necessary raw materials; 2) an operations component providing development of a product by manipulation of the input according to a purposive design; 3) an output component providing release and distribution of the system's products for use by others; 4) a feedback component supplying control and guidance to the other components. Figure 1 presents a simple description of how the four components interrelate.

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[9] Skinner, B. F. Teaching science in high school -- What is wrong? Science, 1968, 159, 704-710.

[10] Brand, D. H. Games theory, decision processes, and man-machine interaction. In R. B. Cattell (Ed.) Handbook of multivariate experimental psychology. Chicago: Rand McNally, 1966, Pp. 417-437.

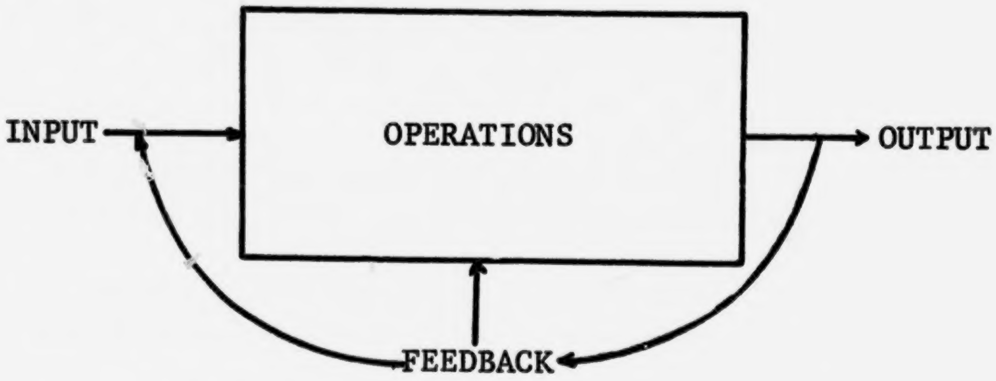
Smith, K. U., and Smith M. U. Cybernetic principles of learning and educational design. New York: Holt, Rinehart and Winston, 1966.

Wiener, N. Cybernetics. New York: John Wiley, 1961.

Wiener, N. The human use of human beings. New York: Doubleday, 1956.

Information and its communication throughout the system become the lifeblood of such systems. The strength of purpose and efficiency-morale characteristics of social systems can be assessed in the nature, use, and interrelationship of information flowing between and within the four components. Feedback information signalling status, performance, and progress at one stage can be used to control and modify actions and operations at earlier stages. A static, docile system lacks the characteristic of feedback which a dynamic, self-improving system possesses in large measures. Lacking feedback, a system becomes loaded with what information theorists have termed entropy, i.e., operational uncertainty and randomness; energies are dissipated by lack of control and guidance in systems.

Specifying and developing the necessary activities of each component and their interrelationships, therefore, puts flesh upon the skeletal framework of Figure 1 and magnifies the complexity of planning. Figure 2 presents a cybernetic systems model that identifies the academic environment as the proper institution for teacher education. It may be viewed as a general-effects model which is applicable to any system preparing teachers. The model applies to systems preparing specialized and regular classroom teachers, such as those that will teach disadvantaged pupils and those that are generalists prepared to teach in self-contained classrooms. We begin the discussion of the model by stating without reservation that teacher education programs typically fail to fulfill the essential tasks in each of the components in Figure 2.



Basic Components of a Cybernetic System

FIGURE 1

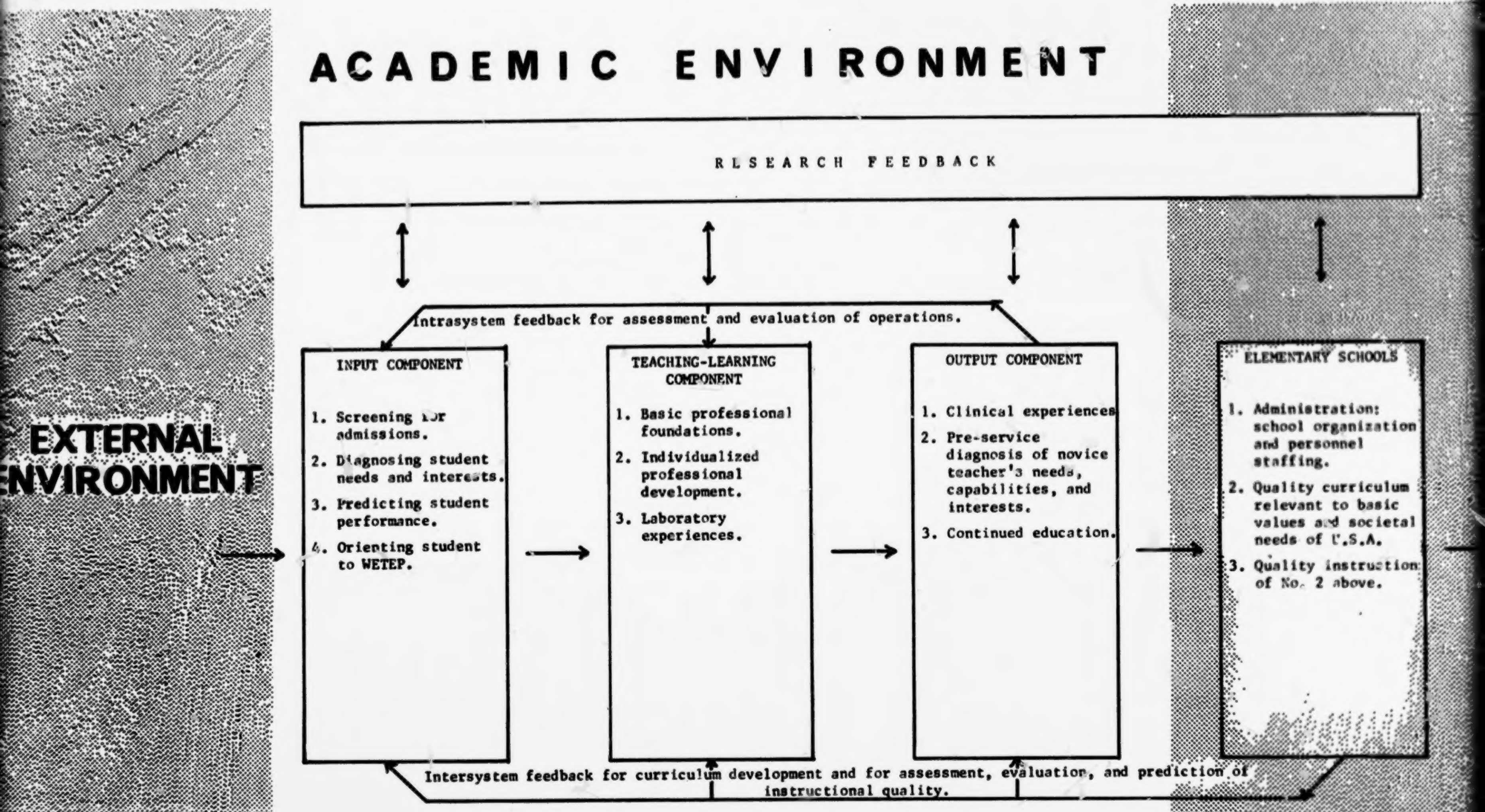

ACADEMIC ENVIRONMENT
RESEARCH FEEDBACK
Intrasystem feedback for assessment and evaluation of operations.
EXTERNAL ENVIRONMENT
INPUT COMPONENT
1. Screening for admissions.
2. Diagnosing student needs and interests.
3. Predicting student performance.
4. Orienting student to WETEP.
TEACHING-LEARNING COMPONENT
1. Basic professional foundations.
2. Individualized professional development.
3. Laboratory experiences.
OUTPUT COMPONENT
1. Clinical experiences
2. Pre-service diagnosis of novice teacher's needs, capabilities, and interests.
3. Continued education.
ELEMENTARY SCHOOLS
1. Administration: school organization and personnel staffing.
2. Quality curriculum relevant to basic values and societal needs of U.S.A.
3. Quality instruction of No. 2 above.
Intersystem feedback for curriculum development and for assessment, evaluation, and prediction of instructional quality.

FIGURE 2

CYBERNETIC MODEL FOR WETEP

Input Component. Perfunctory admission policies characterize most teacher education centers. Entrance into elementary school programs is usually screened only on the basis of an individual's grade-point average--usually a "C" average is all that is required for admission. Due in part to such admissions policies, the education major often stands at the bottom of the intellectual totem pole on campuses. Many students failing to succeed in other areas turn to teaching as a career. The logical assumption underlying these laissez-faire practices must be that everyone with a "C" grade-point average can be properly prepared to teach youngsters or screened out later. Thus, the teaching-learning and output components must be assumed to be quite effective in providing great behavioral changes and in weeding out the unsuited and incapable. Yet is such a logic defensible when "C" averages do not account for the great variance in individual characteristics and needs of candidates? Since only a small percentage of candidates fail elementary school programs, almost anyone with at least moderate intelligence and sufficient motivation can become certified as an elementary school teacher. But is he professionally qualified to teach?

Surely selection procedures can be developed to provide much more information than is now obtained, e.g., abilities, interests, value-orientation, attitudes, past experiences with children, biographical data, etc. Whatever decisions we may want to apply in screening and restricting incoming candidates would be greatly facilitated with comprehensive data on aspirants. We would argue that adequate screening processes are necessary to more often obtain desirable input resources and to initiate the collection of data for evaluative purposes. Not only do the screening procedures select candidates, but they also influence who shall be recruited. Why is it that enrollment in teacher education does not appeal to many of our brightest college and university undergraduates? Yet many of these bright young people upon graduation will join a government or church related program to teach--with no benefit of college work in education prior to their joining--foreign children for two or more years in the most underdeveloped corners of the world; but ironically most will return never to teach children in their own country. Better quality applicants would be attracted to enter teacher education if the entrance requirements represented a challenge. However, other important concerns such as teachers' salaries influence interest in pursuing a teaching career, too.

If one assumes that the teaching-learning and output components can work universal positive effects, it does not carry, because what marks quality output is as uncertain today as what may determine operational effects. Most teacher educators are uncertain what teacher effectiveness is, but go along as if they did know, without pursuing the question for real answers. Feedback information within and from the schools to the teacher preparation system have not been systematized for continual evaluative purposes. With such meager information on the input characteristics of teacher candidates, little diagnosis of individual needs can be provided to maximize the effects of teaching-learning processes through serious individualization of instruction and evaluation of learning.

Thus, lack of information on the nature of inputs drastically weakens the opportunity to continually improve the system through predictive procedures. The Input component obtains information concerning the person applying for entrance into teacher education, his characteristics, behavior, and background experiences. With adequate information, the Input component could perform the following functions:

(1) A screening function to answer the question -- Who is admitted and who is not admitted into the system? As discussed above, this function can be developed into a filtering process which provides some guarantee of success through the system to the individual student and the teacher educators. If meaningful screening continues to be neglected in teacher education, then the Teaching-Learning and Output components must perform the major screening function necessary to establish and maintain quality control in output. In typical programs today, only the obviously poor candidates seem in jeopardy, and most of such cases unfortunately become identified late in their preparation, usually in student teaching. Because of the efficiency desired and consideration due the student's well-being and efforts, it would be very practical to make the screening function a critical aspect of the teacher education system.

(2) A diagnosing function to answer the question -- What are the needs and interests of the student? The system should counsel and guide accepted candidates to provide a beginning study program appropriate to the objectives of the program and the individual needs of students. Above lower bounds of entrance criteria, the students accepted into the system will vary in their intellectual and experiential readiness for professional training. Some may require further studies in language, mathematics, or the social sciences; perhaps some will require more familiarity of real community and world affairs; while some may show considerable strength in preliminary professional studies and readiness to begin more challenging work, especially in special areas of interest. If the preparation system is designed for individualization of instruction, then diagnosis of the student's needs, his strengths, shortcomings, and desires at the input level must be considered essential.

(3) A predictive function to answer the questions -- What estimate can be given at this point for a student's probable success as a teacher? How much confidence can be placed upon the estimate? The development of this function may be thought of as the long-range extension of the screening and diagnosing function. To some extent, the first two functions may operate on logical groups in the absence of scientific knowledge concerning relevant predictors. However, reliance on logical procedures alone would phase out as empirical studies and technical facilities provide the necessary scientific procedures.

For this third function, the proper coordination of evaluation within and between all system components and adequate technical storage-analysis of data should provide probability estimates that can be given with greater confidence the longer students become involved in the system's operations. In other words, teacher education systems should be able to perfect the intrasystem and intersystem feedback functions to the point sometime in the future that the progress of individual students can be assessed at major stages in terms of probability statements. By the time students enter their clinical experiences, we should have high confidence that the student will succeed as a professional teacher.

The predictive function, at least at the input level, is not new at all to major institutions in business and government. It is interesting that the U. S. Army provides buck privates more screening, diagnosis, and prediction of potential effectiveness than teacher education typically provides its students. Private corporations utilize scientific predictive procedures for many job classifications, such as secretaries and engineers; and the U. S. Government requires competitive examinations for most civil service positions. This is not to say all of such procedures now in operation meet their purposes, but at least they indicate research and development in this area. The well-known problems confronted with the "criterion-of-effectiveness" paradigm in the past need not deter teacher educators from research on multiple criteria and their joint contributions to prediction.[11] Viewing the system as a whole, we can see that all of the functions in the input component may be considered a subset of the total evaluation process. Obviously, the intrasystem and intersystem feedback loops comprise the continuing process of evaluation throughout the system.

The Teaching-Learning Component. This component fulfills the preclinical purposes and tasks designed to prepare candidates to work with pupils. It answers the question: What studies, experiences, and sequential teaching-learning patterns does the system provide to effect quality teaching behavior in the student?

In the main, the teaching-learning processes in teacher preparation have been independent lecture courses in a number of content and methods areas, such as art, reading, social studies, and science education. The courses have been largely uncoordinated with regard to the characteristics and needs of individual students and the behavioral changes desired. To further each student's progress, professors and students have relied upon within-course feedback for evaluation and to a much lesser degree, the joint development or programming of the course.

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[11] Gage, N. L. Paradigms for research on teaching. In N. L. Gage (Ed.) Handbook for research on teaching. Chicago: Rand McNally, 1963, Pp. 94-141.

Thus, a teacher education program providing, say, several sections of a required social studies methods course will probably find that the course will vary more by professors than for and by students. Also, although professors may occasionally consult each other concerning the progress of a student, continuous, systematic feedback for all students throughout this component has not been developed in traditional programs. Certainly letter grades for courses provide trifling feedback information to the student and scant evaluative value to teacher educators and potential employers.

If individualization of instruction is a teaching-learning strategy that should be utilized by classroom teachers because professional educators believe it is efficient in effecting human learning, then teacher candidates should also learn through individualized processes. The assistance of modern multi-media and computerized instructional facilities could be significant in developing the many channels or routes through the Teaching-Learning component for individual students' cumulative learnings.[12] Also, they could provide greater direct experiences with classroom and teacher-pupil situations through simulation and multi-media facilities.

The application of available and specially-designed technical aids in this component can help overcome the inflexible scheduling of professor-class relations in present teacher training programs. As an example, the design of Oral Roberts University at Tulsa, Oklahoma, with the help of Radio Corporation of America makes maximum use of instructional electronics for individual professor and student teaching-learning flexibility and efficiency. Programming of immediate feedback and of branching teaching-learning sequences for students through greater use of technology can provide individualization of instruction that is worthy of the term.

Another important advantage over present programs would be the opportunity to systematize many aspects of professional concern, such as classroom discipline and handling of standardized tests, in a manner that allows students many examples and replications of realistic teaching-learning experiences. For instance, it may be possible to provide self-controlled dial-access systems so that all the student needs to do is return according to his own needs and schedule to a computerized teaching-learning station and request what is desired from program storage. Simulation of classroom situations could also be made available with the interactive responses of the student determining outcomes. As with many aspects of the system discussed in this paper, the actual accomplishment of what is desired will require considerable planning and development. However, the first steps are to realize their feasibility in terms of modern technical capabilities and the essential need for such operations in teacher education.

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[12] Gagne, R. M. Contributions of learning to human development. Psychological Review, 1968, 75, 177-190.

*The Output Component*. Three major functions are fulfilled in this component. The first answers the question: *What realistic experiences does the system provide so that the student practices more fully the behaviors, responsibilities, and routines of teaching?* The second functions of the Output component is realized toward the end of the clinical experience. It answers the questions: *What recommendations concerning the individual student's abilities and qualifications as a teacher should be given to the student and to those with whom he may seek employment?* *How can the student's transition from the teacher preparation system to the schools be facilitated and made meaningful in terms of the concerns of the student, the preparatory system, and the schools?* The third function is concerned with the close relationships, throughout the output activities, between those working in the teacher education program and those in the elementary schools. It answers the question: *How can better communication and cooperation be developed between teacher educators, school administrators and teachers, and those in state departments of education?*

For the first function, the Output component should provide extended clinical experiences in actual classrooms where the student carries much responsibility for actual teaching-learning operations. It goes beyond previous exposure to classroom situations and settings through simulated conditions, multi-media experiences, and short-term classroom experiences in the laboratory experiences of the Teaching-Learning component. Now the student becomes involved in a classroom or classrooms as a responsible teacher, one who must become familiarized with each pupil as an individual learner, plan teaching strategies, develop learning and evaluative materials, work cooperatively with colleagues, etc.

The history of the student entering this component of the system should exhibit strong probability for success in teaching up to this point. The abundance of information accumulated in the Input and Teaching-Learning components should provide more than sufficient data for predicting an individual's chances for success in the clinical experiences.

Poor development of the intersystem feedback loop which coordinates the efforts and interests of the teacher education system with those of the public school systems has been a serious defect in traditional programs. Since the public school systems provide the realistic classroom situations for the practice of student teachers, the public schools should be more involved in this component than in the past, from three points of view. As consumers of output from teacher education systems and with the responsibility to protect their pupils from possible unprofessional practices of student teachers, the public schools can only gain by being more closely involved in operations of the output component. From an in-service point of view, the public schools could also gain much from more meaningful participation in this component.

Postulating the student-teaching triad (all concerned with practice teaching)--the student, college supervisor, and cooperating teacher--as a socio-psychological model, Yee[13] studied the group dynamics operating in practice teaching. It was found that the triad seldom approaches levels of social interaction and professional activities worthy of the purposes for practice teaching. The opportunity to develop intersystem feedback between the professional school and the public schools for the benefit of the whole process of teacher education as well as for the three individuals involved has been ignored in traditional programs.

The chief causes of such superficiality in interpersonal relations may be attributed to the inadequate resources for handling the large numbers of candidates and the administration of practice teaching which forced many students to work under unqualified and ill-prepared cooperating teachers and supervisors. Thus, systematic improvements in student teaching and indeed in all aspects of teacher education would be easier to develop if quantitative concerns to help overcome teacher shortage were de-emphasized to secondary roles and if concerns for the qualitative preparation of students were made primary.

As its second function, the Output component provides more than a placement service for students completing the teacher education program. Finding graduates a teaching position and helping school districts fill their vacancies are important services. However, by the time a student's clinical experiences are nearly completed, the information accumulated for the student throughout the system could be assessed as a whole by a panel of teacher educators and the student. It is assumed that this assessment would rarely be held to consider the failure and dismissal of a student. At this point, the student should expect to graduate and receive a teaching certificate, but where to teach and to whom require special consideration.

An in-depth analysis of the student's capabilities, needs, and reactions would provide significant feedback to the teacher educators, for feedback to the student as he faces himself and his future work, and for preparation of the student's placement papers. This is not to say that evaluation and consultation with individual students could not occur often throughout the system. What this final, in-depth assessment provides is an analysis that could lead to important recommendations for and from the novice teacher.

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[13] Yee, A. H. Interpersonal relationships in the student teaching triad. Journal of Teacher Education, 1968, 19, 95-112.

Yee, A. H. Student teaching: A problem in group dynamics. California Journal for Instructional Improvement, 1967, 10, 188-201.

Yee, A. H. The student-teaching triad: The relationship of attitudes among student teachers, college supervisors, and cooperating teachers. U. S. Department of Health, Education, and Welfare, Office of Education. Cooperative Research Project No. 5-8354. Austin: The University of Texas, 1967.

Perhaps no other profession requires greater consideration for the varying conditions under which professional activities are conducted than teaching. Given the abundance of information the system should be able to accumulate for each candidate, professional recommendations concerning important conditions, such as socio-economic level of pupils, grade levels, school roles, content areas, etc., could be surveyed for the benefit of the candidate. Attention could also be given an individual's future studies, perhaps encouraging him toward graduate work. Arrangement could be made for continuing feedback from the graduate to aid the teacher educators in assessing their system's long-term influence upon the graduate's work as a teacher.

In present teacher education programs, nothing approximates this third function, because there is no structure for it and a complete lack of the necessary information. To satisfy the functions of the Output component, we assume that close working relations have been developed between academic, school, and state personnel in the developmental functioning of previous components. Such relations are highlighted in the Output component because of the existing connections between the three institutions at this crucial point in programs of teacher education.

Feedback Component. For cyberneticists, the most distinctive feature of cybernetic systems is the feedback loops or channels that direct self-regulating information to other system components. The process of feedback allows system outputs to influence prior operations and output processes, i.e., learning from our preceding work and thoughts. When we are performing tasks such as skiing or driving, we normally make small self-controlling movements to correct slight errors in direction.

The use of feedback processes in mechanical systems, such as the self-correcting pilot mechanisms of ships and aircraft, are very common in modern technology. Application of cybernetic principles to the study of living systems is as feasible as it has been in technology. As might be expected, however, cybernetic theories cannot be applied as rigidly in systems involving people as they can in non-living systems. Since feedback denotes the flow and use of information to control the operations of a system, the concept of feedback holds great potential value to the study and development of social organizations, especially institutions involving many people and complex tasks.

Analyzing social organizations from the cybernetic frame of reference, we can find organizational processes for self-improvement and self-regulation through systematic information exchange. We especially want to find information processes dealing with the quality control of whatever the organization produces. One estimate of an organization's viability and capacity to be productive and efficient is the nature of its information network composed of channels of communication between antecedent and subsequent events. A vital, progressive institution operates with an efficient feedback system of process self-regulation and product evaluation, while a lack of adequate feedback processes characterizes a chaotic, unorganized institution.

Teacher education programs typically function without systematic feedback components. They tend to have inefficient methods of providing feedback to students, no self-regulation procedures for learning sequences, nor methods of assessing the effectiveness of the program or the graduate. To be an effectual and self-improving organization, a teacher education program must be developed with feedback processes which provide relevant information for diverse purposes, such as immediate feedback for students' learning at the "microcriterion" teaching-learning operation and assessments of student progress at critical points of the program.

Thus, throughout the WETEP system as shown in Figure 2, intrasystem feedback channels facilitate the transfer of relevant information concerning students' progress through the Input, Teaching-Learning, and Output components. Intrasystem feedback concerns immediate feedback to students and program evaluation. Analagous to a nervous system, it plays a vital role in interrelating all bits and pieces of the whole system and improving the system. Development of adequate intrasystem feedback channels will come about only with the aid of modern computer facilities which can be programmed to yield and handle immediate responses for inquirer, data collection, records storage and retrieval, and evaluation analyses. See the paper by Professor Cleary which deals with the development of system evaluation in WETEP.[14]

The intersystem feedback channels, also shown in Figure 2, interrelate what the teacher education system does with the needs and realities of school systems. Such channels provide self-regulating information between the training center and schools; first, to give long-range evaluation of the effects of the teacher education system, especially in predicting student success in earlier stages of the system and incorporating the needs and realities of schools into teacher education; and second, to help schools improve their own curricular and instructional programs through greater involvement in teacher education, and continuing in-service education for teachers and administrators.

Adequate intersystem feedback channels will involve regular working relations between teacher education and school personnel. Computer facilities would be useful to some degree in intersystem communication, especially with in-service education, but group discussion and person-to-person relationships will prevail in these important feedback channels. This form of reciprocal feedback is illustrated by the cooperative relations in the student-teaching triad described above in the section on the Output component.

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[14] Cleary, Anne. Assessment procedures for WETEP. Elsewhere in this volume.

## Detailed Development of the Cybernetic System[15]

So far, this paper has attempted to: (1) clarify teacher education's key responsibility to provide qualified professional teachers for the schools of the United States; (2) argue that the design of educational programs can only be planned and developed to the degree that objectives are complementary and clearly specified; and (3) present a cybernetic systems model which would interrelate all aspects of WETEP to properly prepare professional teachers. In do doing, we have explained why teacher education must be considered the most critical but least developed area in education and described how the planning and organization of teacher preparation programs can be accomplished through the process of systems approach.

The fourth section of this paper which follows shows how detailed planning can proceed from the systems model framework. By showing how educational objectives and processes can be specified and interrelated from macro- to micro-concerns, this last section attempts to demonstrate the feasibility and logic of systems approach in detailed educational planning.

First, an educational system requires a taxonomy of objectives and activities which starts with the broad functions of the model system discussed in the last section of this paper and extends as far as specification of objectives and activities is desired. Such a hierarchial taxonomy is needed to organize, classify, and define what is to be learned and how it is to be learned, systematically, from general or macro-terms to most specific or micro-terms. Because it is only observable and measurable behavior that is unambiguous and unequivocal in terms of objectives, activities to effect the objectives, and procedures to evaluate results, the system requires a taxonomy based upon behavioral criteria. The system's objectives, therefore, are certain observable and assessable cognitive, affective, and psychomotor behaviors. For the students to achieve such behavioral objectives, the system provides them specific performance activities or operations in proper sequences. Since objectives and operations are systematically conjoined, they shall be referred to as objectives-operations. Thus, with such distinctions, we provide the system with informational matter that can flow through its complex network as students proceed.

Now how do we organize and sequence objectives-operations? Consistent with the systems model, a taxonomy is needed to classify the objectives-operations into hierarchial sets containing interrelated learnings and system controls. Thus, such a taxonomy extending from macro-system to micro-system concerns may appear as follows:

I. Overall system -- a total, time-variant arrangement of input, modification, and output objectives-operations with feedback control and guidance processes, e.g., a teacher education system.

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[15] Karen Skuldt and Jay Shores assisted the author in these developments.

A. Component (C) -- a major set of system objectives-operations dealing with either Input, Teaching-Learning, or Output concerns, such as shown in Figure 2 above.

   1. Element (E) -- a subset of a component identifiable by interrelated objectives-operations and system controls, e.g., Science Education element or Communicative Arts element in the Teaching-Learning component.

      a. Subelement (S) -- a subset of an element dealing with a specific set of closely interrelated objectives-operations, e.g., learning to teach reading in the Communicative Arts element.

         (1) Module (M) -- subset of a subelement, e.g., units of instruction devoted to learning how to construct and administer achievement tests in the subelement of measurement and evaluation in the Educational Psychology element.

            (a) Level (L) -- subset of a module where an objective is stated in most specific and final terms which Gage[16] classed as "microcriteria" of teachers' effectiveness, e.g., learning to explain an idea, construct multiple-choice test items, or learning how phonemes are related to graphemes. When there are several modes of instruction to handle a microcriterion, they are called forms.

Figure 3 presents a Venn diagram to describe the interrelationship of taxonomic sets just listed. To understand the flow of information through the educational system and how it is effectively used for learning, one might consider the complex networks involved in supplying consumers with electricity, water, telephone-telegraph services, etc. Even though these analogies are hardly perfect, they help emphasize the critical points of usage that make the systems meaningful and worthwhile to those for whom they are intended, i.e., where consumers fulfill their objectives-operations in the systems. Or consider the example of vascular systems in living things where the smallest units, such as capillaries, fulfill system objectives with their operations. Arterioles, venules, and the aorta are surely vital parts of the human blood circulatory system, but the real action is in the capillaries.

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[16] Gage, op. cit., p. 120.

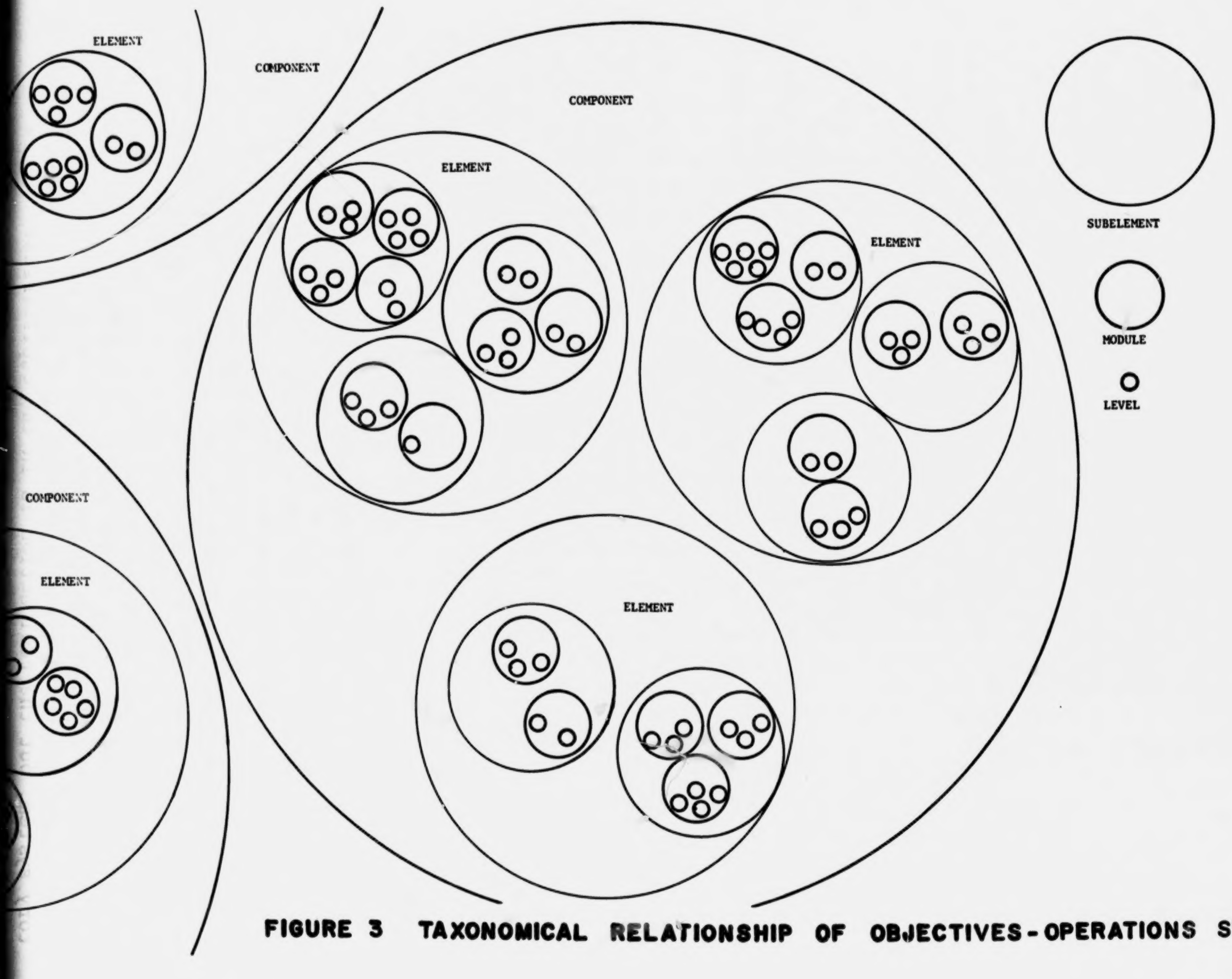
ELEMENT
COMPONENT
COMPONENT
ELEMENT
ELEMENT
SUBELEMENT
MODULE
LEVEL
COMPONENT
ELEMENT
ELEMENT

FIGURE 3 TAXONOMICAL RELATIONSHIP OF OBJECTIVES-OPERATIONS SETS

In an educational system designed with the above taxonomy, therefore, the last set of objectives-operations termed levels (L) is where actual instruction and learning take place. The operational meaning and relevance of all other sets depend upon their subsets of microcriteria or their levels. The names we give various sets are arbitrary, and the number and type of subsets may vary according to what kind of educational system we design, but the last steps which we have called levels must always be developed. Present-day teacher education programs that we have criticized earlier are not designed systematically to modules and levels, perhaps not even to subelements. The last sentence's economy of words describing teacher education's basic problem today illustrates the feasibility of taxonomic objectives-operations and the general applicability of systems approach to educational programs.

Let us proceed to the question of laying out or mapping the objectives-operations for an educational system. Given a specified amount of time and a complex set of objectives-operations, we must plan teaching-learning strategies, decision sequences, and multi-channelled options adaptive to student needs and interests. Such complex thinking and work involved in organizing and interrelating many minute concerns require the extensive use of schematic diagrams. For this requirement, a language and format appropriate to our needs must be found. For that, we can be guided by technological-scientific flowcharting procedures in engineering fields, such as electronics and computer processes. Flowcharts in those fields communicate succinctly what is intended at each stage of activity whether it be radio-television circuitry, telephone systems, computer processes, or NASA systems control. In fact, flowcharting has reached the point where the American Standards Association has attempted to standardize flowchart symbols and processes. Our particular language needs are in the area of information processing.[17]

Figure 4 presents the symbols we have found necessary and useful at this time. Other symbols, such as those commonly used for tape routines and new ones for micro-teaching sessions and lectures, may need to be incorporated when levels become more extensively developed. The figural symbols are interconnected by flowline arrows which indicate the alternate channels of communication. The feasibility of the flowchart language we have developed has been shown by our ability to express a great variety of complex but clearly stated sets of objectives-operations. For a simple but ridiculous illustration, Figure 5 shows how flowcharting can map a series of common life experiences (objectives-operations) many readers may recognize.

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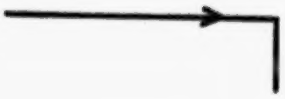
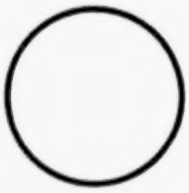
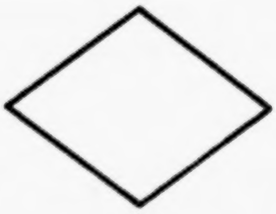
[17] Radio Corporation of America. Flowcharting standards for information processing. (Rev.) Camden, N. J.: Electronic Data Processing, RCA, 1967.



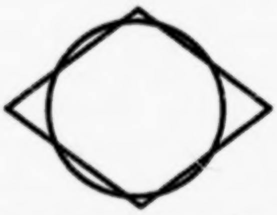
__Channel__ A path indicated by a flowline arrow through which communication flows within the system is a channel. The arrowhead indicates the direction communication flows.



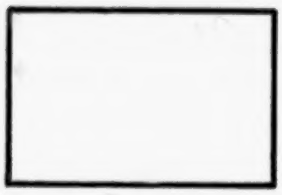
__Entry and Exit Points__ Entry and exit points are points at which students may enter or leave components, elements, modules, etc.



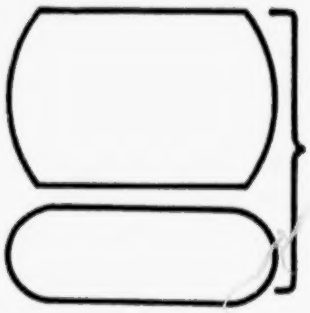
__Forced Decision Point__ A point where the student is forced by the system to enter one of several alternative channels is a forced decision point.



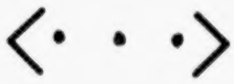
__Free Decision Point__ A point where the system allows the student to make his own choice of which alternative channel he will enter is known as a free decision point.



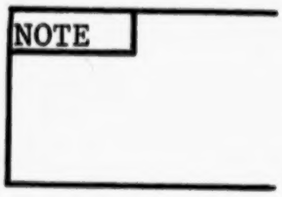
__Simple Procedure__ The simple procedure symbol indicates a set of objectives-operations containing no decision nor entry and exit points.



__Complex Procedure__ The complex procedure symbols indicate sets of objectives-operations which could be expanded into another detailed flowchart involving entry and exit points, decision points, and simple and complex procedures.



__Replication__ This symbol shows replication of identical structures.



__Annotation__ This symbol is used for the addition of descriptive comments or explanatory notes.

Flowchart Symbols and Their Use

FIGURE 4

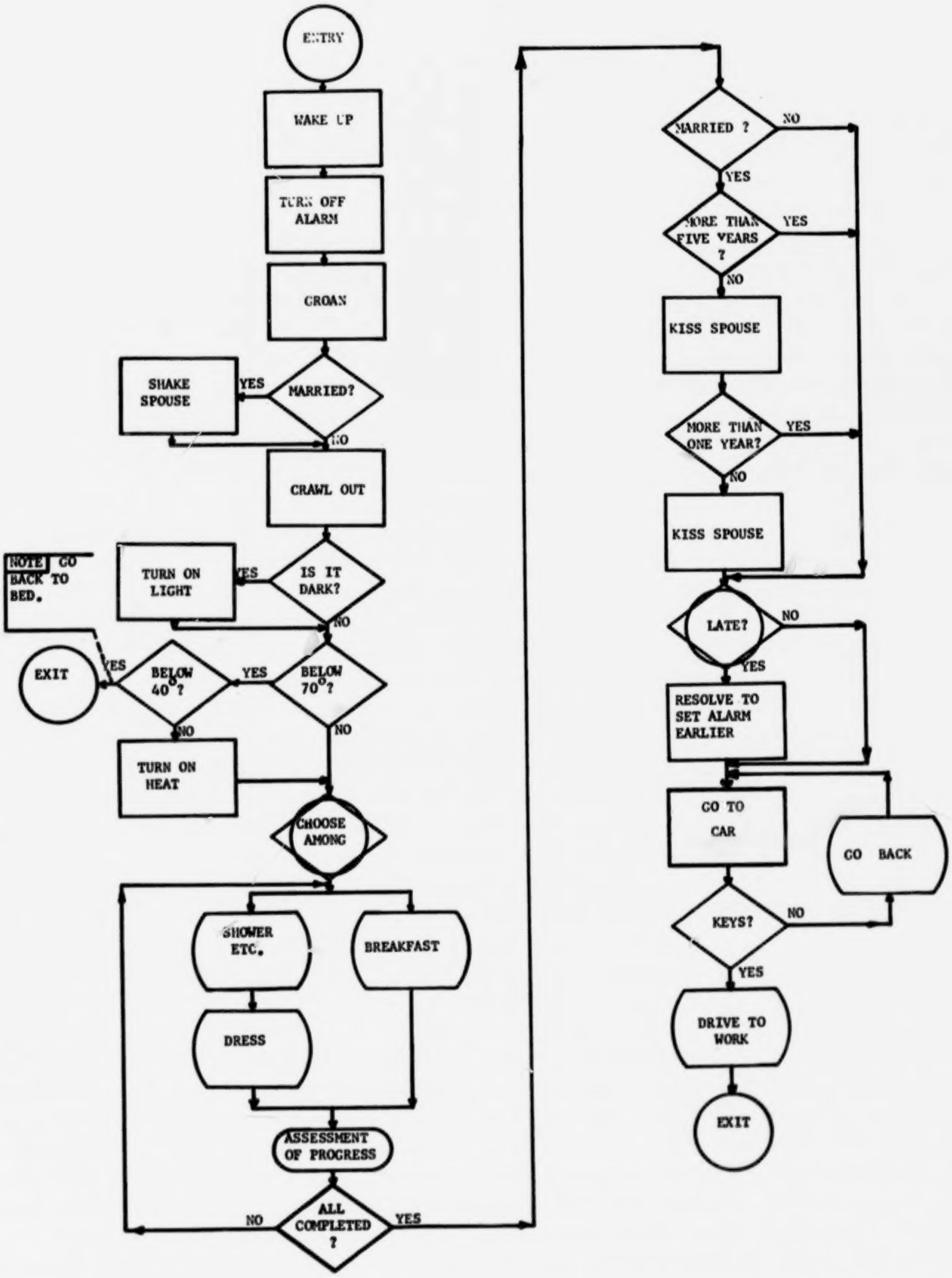

ENTRY
WAKE UP
TURN OFF ALARM
GROAN
MARRIED?
YES
SHAKE SPOUSE
NO
CRAWL OUT
IS IT DARK?
YES
TURN ON LIGHT
NO
NOTE GO BACK TO BED.
BELOW 70°?
YES
BELOW 40°?
YES
EXIT
NO
TURN ON HEAT
NO
CHOOSE AMONG
SHOWER ETC.
DRESS
BREAKFAST
ASSESSMENT OF PROGRESS
ALL COMPLETED ?
NO
YES
MARRIED ?
NO
YES
MORE THAN FIVE YEARS ?
YES
NO
KISS SPOUSE
MORE THAN ONE YEAR?
YES
NO
KISS SPOUSE
LATE?
NO
YES
RESOLVE TO SET ALARM EARLIER
GO TO CAR
GO BACK
KEYS?
NO
YES
DRIVE TO WORK
EXIT

FIGURE 5

ILLUSTRATIVE FLOWCHART OF A SIMPLE DAILY PROCEDURE

Figures 6 and 7 present flowcharts of objectives-operations more relevant to the concerns of this paper. They show the sequential steps to be taken in the screening element of the input component which have been developed to the module sets.[18] To help the reader interpret the symbols and the flowchart, an accompanying narrative has been extracted from written matter justifying and describing such work. To distinguish taxonomic sets from each other in the flowcharts, entry and decision points have been coded for identification (ID) purposes. Thus, a one digit fugure is used to distinguish entry, exit, and decision points within components, two for elements, three for subelements, and four for modules. To help pin-point ID's, an alphabetic prefix is given before the numerical code to identify the element, such as EP for Educational Psychology. For a complete listing of ID symbols for WETEP elements, see Table 1. Headings are also given on flowcharts to identify subelements, modules, etc. While flowcharts could be developed to fill whole walls, potential conciseness in identification is a significant dimension to the flowcharting language.

Figure 8 shows what Professor Calvin Gale sees as an appropriate model for a Science Education element[19] in teacher education. After many discussions with him concerning his objectives-operations and his written description of objectives-operations, we were able to flowchart his views. In this process, the system analysts could help Gale become more definite and concise concerning the development of his element without tampering with his objectives-operations. Figure 8 shows that Gale assumes a most flexible stance in handling science facts and information in his emphasis upon processing skills and orientation. After SC-100 which directs the student into the Philosophy subelement, decision point SC-400 provides for free student choice in deciding the order in which modules will be experienced. However, it is only in Figure 9 that we begin to see a module detailed to show how specific objectives-operations will be handled.

## Summary

Essential to the maintenance and progress of American society are the great educational functions intended to promote the growth and development of its people. Believing that, Americans provide multiple opportunities for all youngsters in a program of universal schooling. Since teachers carry more significant responsibility for learners' school achievement in the United States than other societies, they must be better prepared than they have been in the past and present, to better match such professional expectations. The preparation of American

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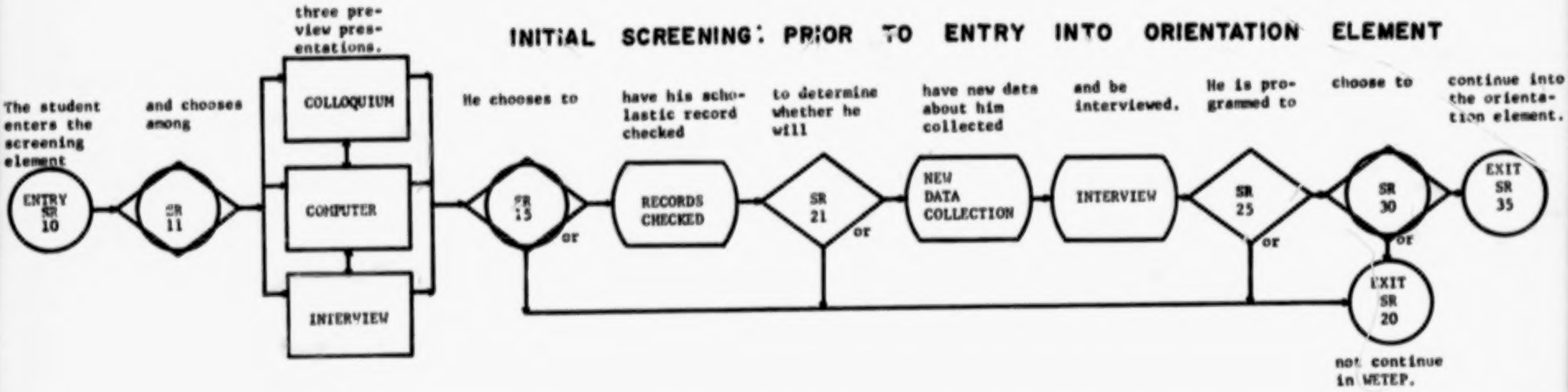
[18] Andersen, Dan. Input component: Orientation and screening. Vol. II, Pp. 5-34, WETEP Specifications.

[19] Gale, Calvin. The Science Element. Vol. II, Pp. 195-227, WETEP Specifications.

FIGURE 6 MODEL OF SCREENING ELEMENT

INITIAL SCREENING: PRIOR TO ENTRY INTO ORIENTATION ELEMENT


three pre-view presentations.
The student enters the screening element
ENTRY SR 10
and chooses among
SR 11
COLLOQUIUM
COMPUTER
INTERVIEW
He chooses to
SR 15
or
have his scholastic record checked
RECORDS CHECKED
to determine whether he will
SR 21
or
have new data about him collected
NEW DATA COLLECTION
and be interviewed.
INTERVIEW
He is programmed to
SR 25
or
choose to
SR 30
or
continue into the orientation element.
EXIT SR 35
EXIT SR 20
not continue in WETEP.

SECOND SCREENING: PRIOR TO ENTRY INTO TEACHING, LEARNING, COMPONENT

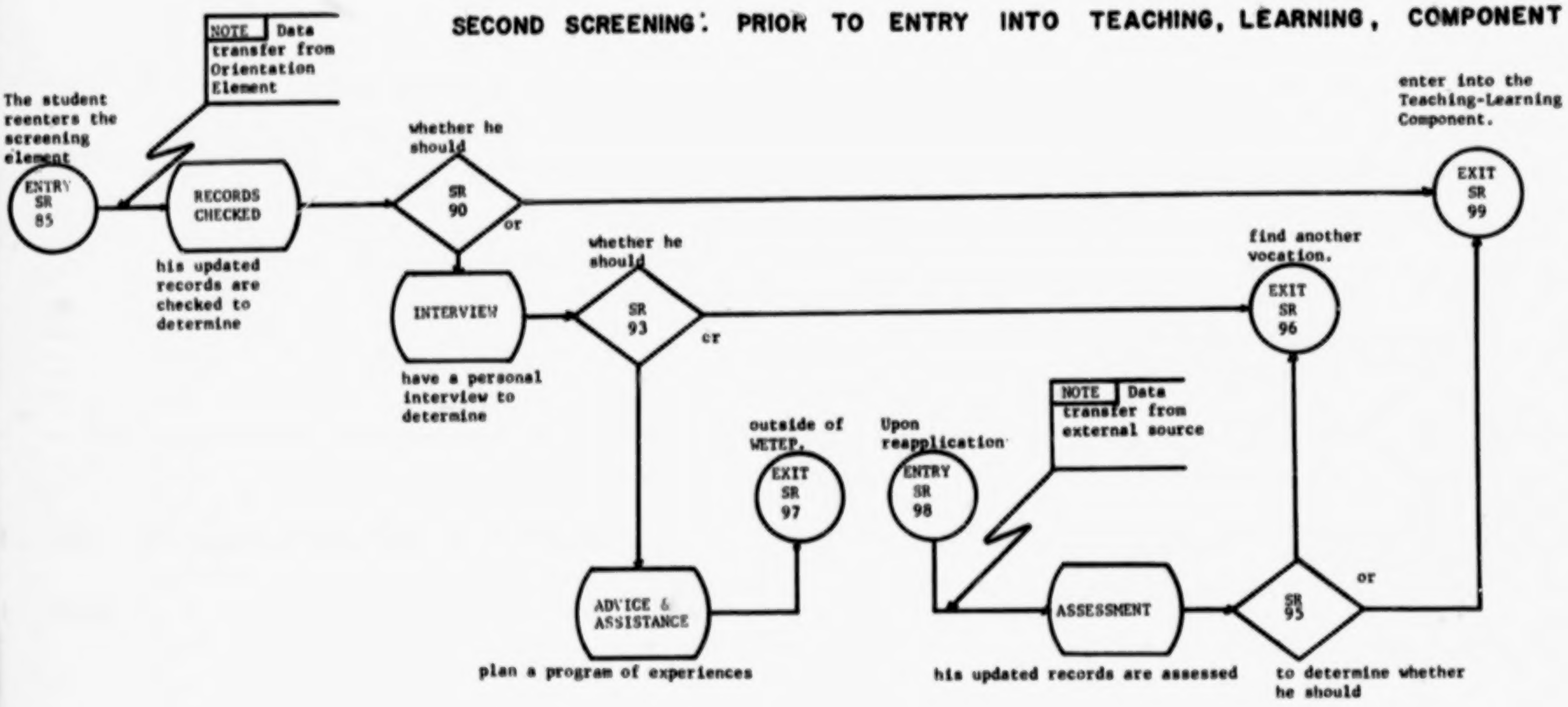
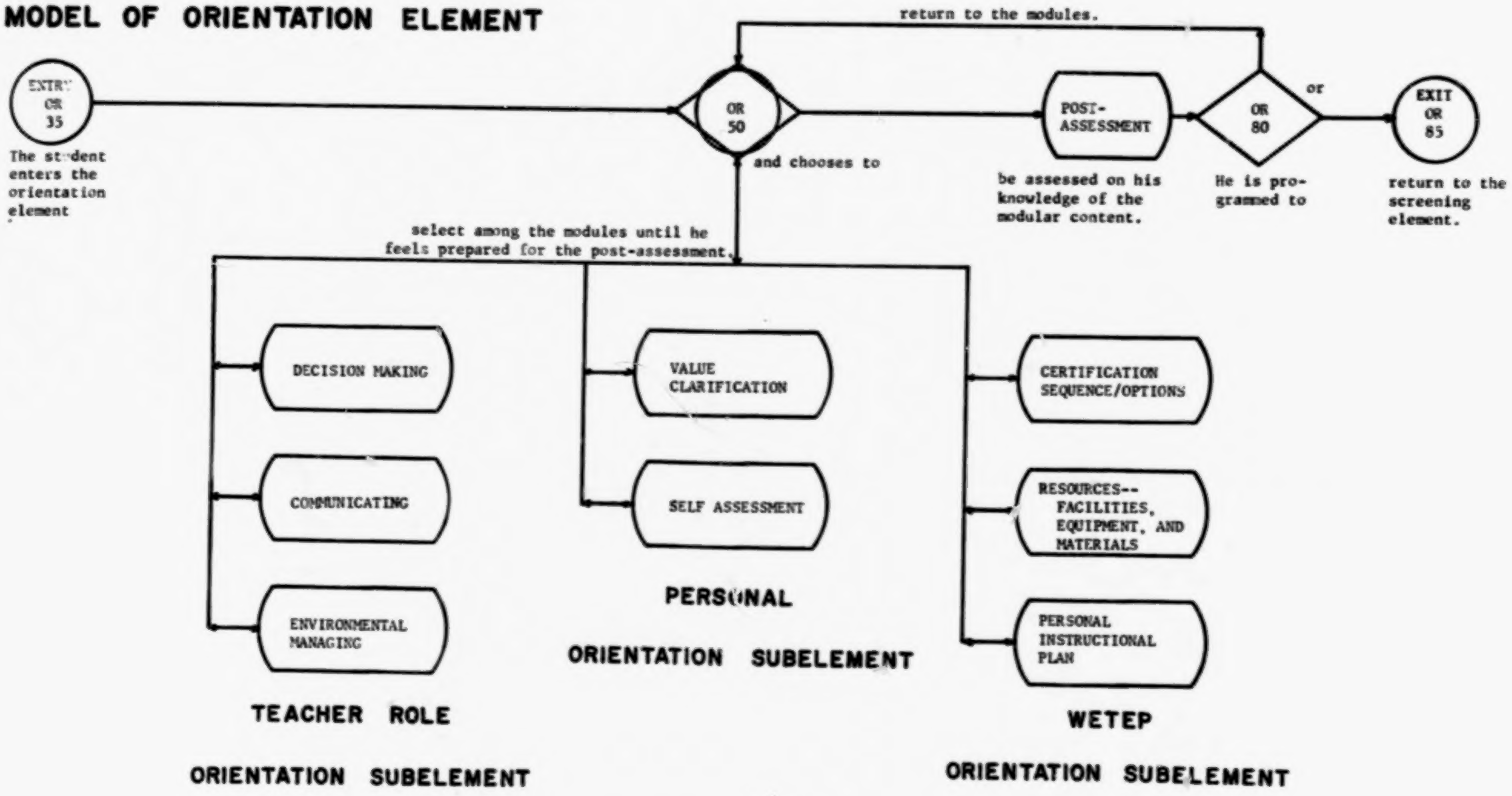

NOTE Data transfer from Orientation Element
The student reenters the screening element
ENTRY SR 85
RECORDS CHECKED
his updated records are checked to determine
whether he should
SR 90
or
enter into the Teaching-Learning Component.
EXIT SR 99
INTERVIEW
have a personal interview to determine
whether he should
SR 93
or
find another vocation.
EXIT SR 96
ADVICE & ASSISTANCE
plan a program of experiences
outside of WETEP.
EXIT SR 97
Upon reapplication
ENTRY SR 98
NOTE Data transfer from external source
ASSESSMENT
his updated records are assessed
SR 95
or
to determine whether he should

FIGURE 7

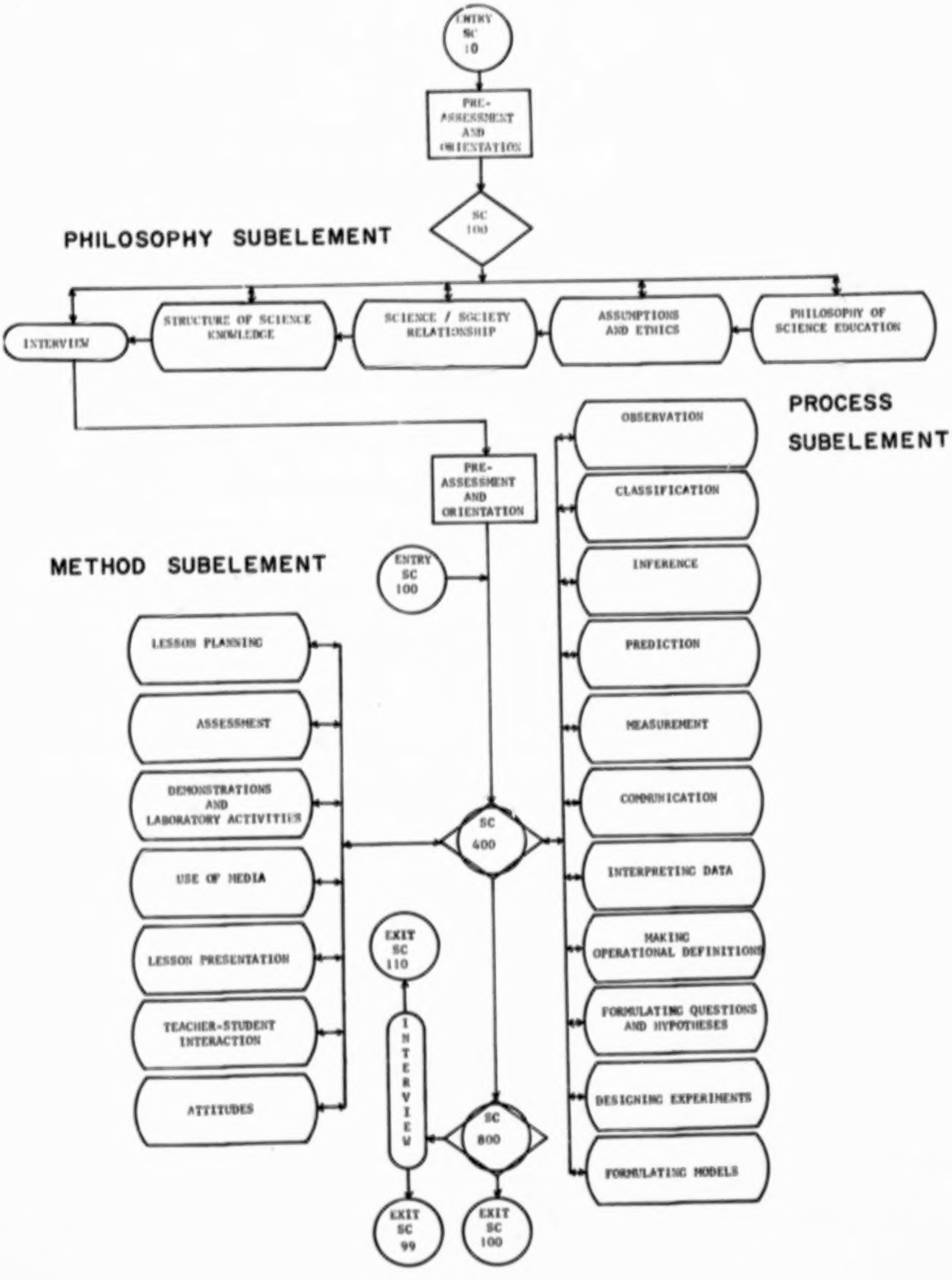
MODEL OF ORIENTATION ELEMENT


ENTRY
OR
35
The student enters the orientation element
OR
50
and chooses to
select among the modules until he feels prepared for the post-assessment.
return to the modules.
POST-ASSESSMENT
be assessed on his knowledge of the modular content.
OR
80
He is programed to
or
EXIT
OR
85
return to the screening element.
DECISION MAKING
COMMUNICATING
ENVIRONMENTAL MANAGING
TEACHER ROLE
ORIENTATION SUBELEMENT
VALUE CLARIFICATION
SELF ASSESSMENT
PERSONAL
ORIENTATION SUBELEMENT
CERTIFICATION SEQUENCE/OPTIONS
RESOURCES--FACILITIES, EQUIPMENT, AND MATERIALS
PERSONAL INSTRUCTIONAL PLAN
WETEP
ORIENTATION SUBELEMENT

## TABLE 1

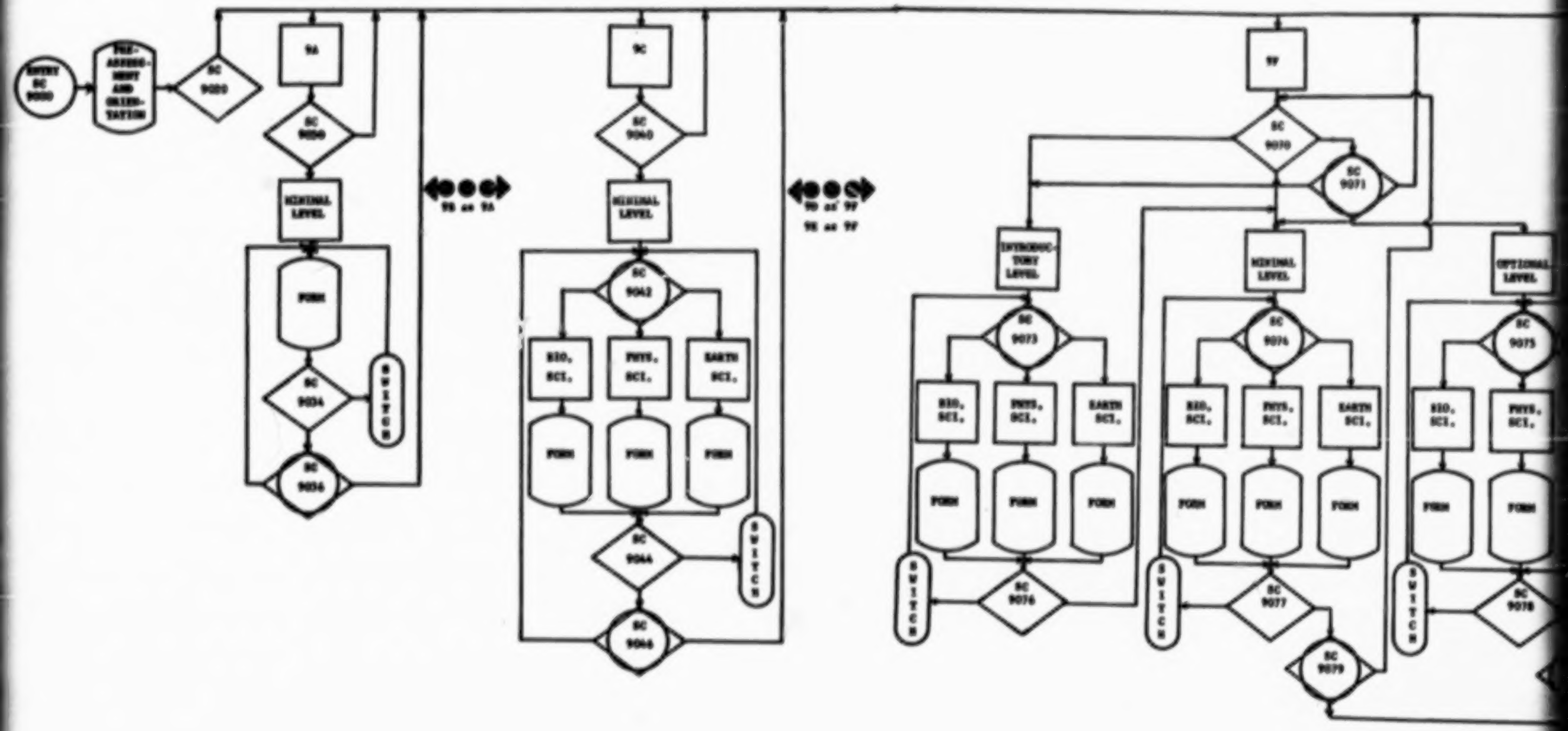
## IDENTIFICATION SYMBOLS FOR ELEMENTS

| ID Symbol | Element |
|---|---|
| AR | Art Education |
| CI | Curriculum and Instruction |
| CO | Communication |
| CD | Culturally Diverse |
| EC | Early Childhood Education |
| EP | Educational Psychology |
| GU | Guidance Education |
| HE | Health Education |
| LE | Leisure Education |
| MA | Mathematics Education |
| ME | Media and Technology Education |
| MU | Music Education |
| OR | Orientation |
| PE | Physical Education |
| SA | Safety Education |
| SC | Science Education |
| SR | Screening |
| SS | Social Studies |
| SE | Special Education |


ENTRY SC 10
PRE-ASSESSMENT AND ORIENTATION
SC 100
PHILOSOPHY SUBELEMENT
INTERVIEW
STRUCTURE OF SCIENCE KNOWLEDGE
SCIENCE / SOCIETY RELATIONSHIP
ASSUMPTIONS AND ETHICS
PHILOSOPHY OF SCIENCE EDUCATION
PROCESS SUBELEMENT
PRE-ASSESSMENT AND ORIENTATION
METHOD SUBELEMENT
ENTRY SC 100
OBSERVATION
CLASSIFICATION
INFERENCE
PREDICTION
MEASUREMENT
COMMUNICATION
INTERPRETING DATA
MAKING OPERATIONAL DEFINITIONS
FORMULATING QUESTIONS AND HYPOTHESES
DESIGNING EXPERIMENTS
FORMULATING MODELS
LESSON PLANNING
ASSESSMENT
DEMONSTRATIONS AND LABORATORY ACTIVITIES
USE OF MEDIA
LESSON PRESENTATION
TEACHER-STUDENT INTERACTION
ATTITUDES
SC 400
EXIT SC 110
INTERVIEW
SC 800
EXIT SC 99
EXIT SC 100

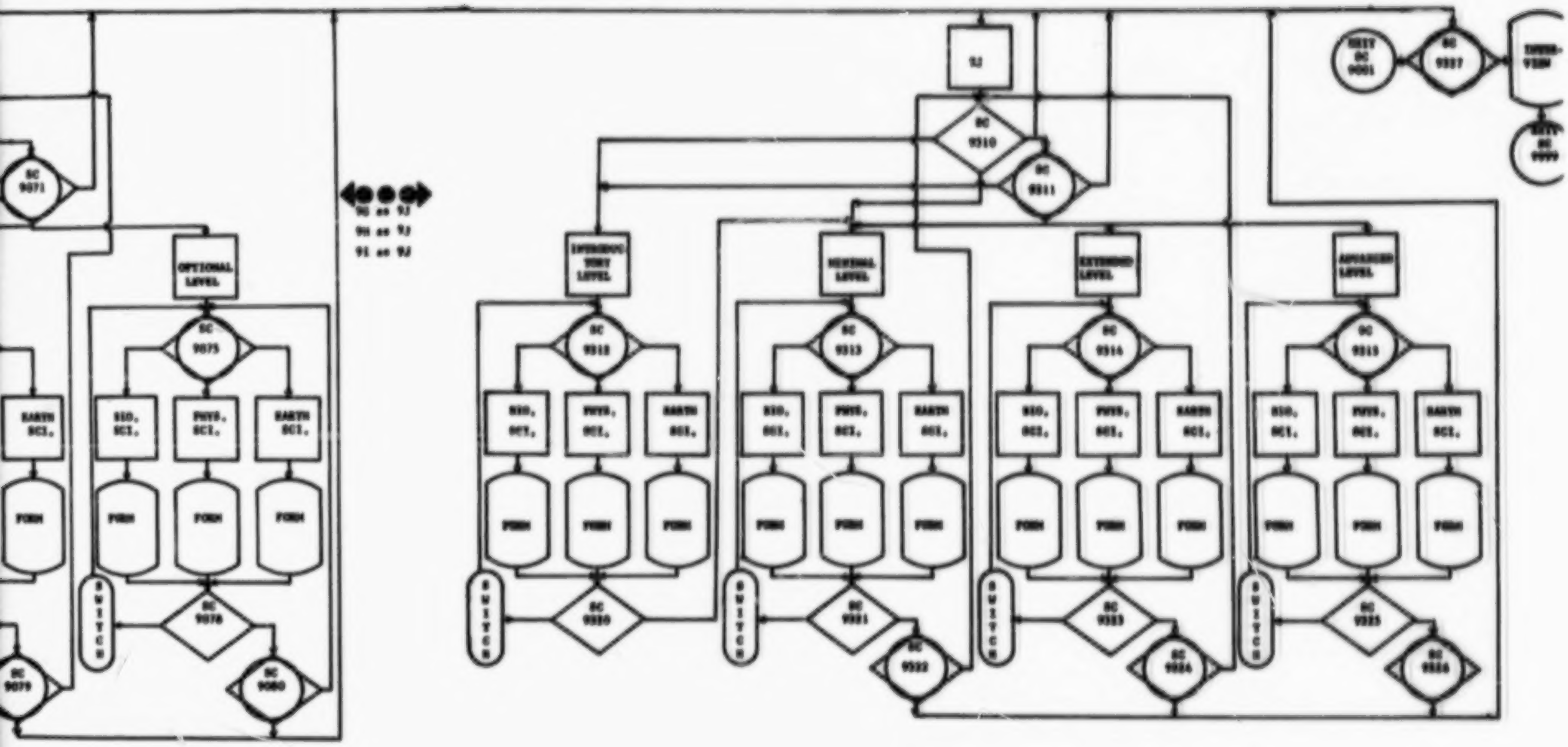
Model of Science Education Element

FIGURE 8


ENTRY SC 9000
PRE-ASSESSMENT AND ORIENTATION
SC 9020
9A
SC 9030
MINIMAL LEVEL
FORM
SC 9034
SWITCH
SC 9036
9B or 9A
9C
SC 9040
MINIMAL LEVEL
SC 9042
BIO. SCI.
PHYS. SCI.
EARTH SCI.
FORM
FORM
FORM
SC 9044
SWITCH
SC 9046
9D or 9F
9E or 9F
9F
SC 9070
SC 9071
INTRODUCTORY LEVEL
MINIMAL LEVEL
OPTIONAL LEVEL
SC 9073
SC 9074
SC 9075
BIO. SCI.
PHYS. SCI.
EARTH SCI.
BIO. SCI.
PHYS. SCI.
EARTH SCI.
BIO. SCI.
PHYS. SCI.
FORM
FORM
FORM
FORM
FORM
FORM
FORM
FORM
SWITCH
SC 9076
SWITCH
SC 9077
SC 9079
SWITCH
SC 9078

MODEL OF MEASUREMENT

FIGURE 9


SC 9071
OPTIONAL LEVEL
SC 9075
BIO. SCI.
PHYS. SCI.
EARTH SCI.
FORM
SWITCH
SC 9076
SC 9079
SC 9080
9G as 9J
9H as 9J
9I as 9J
9J
SC 9310
SC 9311
INTRODUCTORY LEVEL
MINIMAL LEVEL
EXTENDED LEVEL
ADVANCED LEVEL
SC 9312
SC 9313
SC 9314
SC 9315
SC 9320
SC 9321
SC 9322
SC 9323
SC 9324
SC 9325
SC 9326
EXIT SC 9001
SC 9327
INTER-VIEW
EXIT SC 9999

OF MEASUREMENT MODULE

FIGURE 9

teachers is typically superficial; analyses of teacher education programs today show that their designs are vague, inefficient, and require extensive development. The design and development of WETEP is one effort to overcome such problems in teacher preparation.

Utilizing a cybernetic systems model, this paper described a teacher education system that is generalizable to any type of teacher education program. The use of terms, such as system and systems approach, denote the need to develop designs for educational institutions which specify without uncertainty what the objectives are and interrelate all facets of the system to achieve the objectives. Identification and analysis of the essential component tasks of teacher education also suggest that present programs fail to fulfill basic system requirements. Greater systematic programming and coordination of the various components, and application of modern instructional modes are developments essential to providing effective teacher preparation today and in the future.

# COGNITIVE AND AFFECTIVE LEVELS IN TEACHER EDUCATION

Margaret Ammons

Organization of WETEP components, elements, and sub-elements is predicated to a great extent upon the pattern suggested by Bloom, et.al. in Taxonomy of Educational Objectives: Handbook I: The Cognitive Domain and by Krathwohl, et.al. in Taxonomy of Educational Objectives: Handbook II: The Affective Domain. In accepting these taxonomies as a basis for organization, we accept the concept of: Six levels of cognitive objectives (1. Knowledge 2. Comprehension 3. Application 4. Analysis 5. Synthesis 6. Evaluation) and four categories of affective objectives (1. Receiving (attending) 2. Responding 3. Valuing 4. Organization 5. Characterization by a value or value complex).

There are also certain assumptions implicitly accepted, the major ones being:

a. that cognitive and affective behaviors, while not separable in fact, are necessarily separable for purposes of emphasis, both in discussion and in structuring learning opportunities for students;

b. that cognitive learning requires different opportunities from those required by affective learning;

c. that there is not a 1-to-1 correspondence between affective and cognitive learning;

d. that each kind of behavior - cognitive and affective - develops from simple to complex;

e. that learning opportunities differ with the complexity of the behavior sought.

There is another important question with related assumptions which must be asked: to what cognitive level can the University reasonably expect to move students during the pre-service program?

It could be assumed that pre-service students would not be expected to move beyond Level 3, the level of Application. This assumption presupposes that the levels of the cognitive taxonomy occur only in a vertical dimension, that, for example, Knowledge exists in only one form. If this assumption is accurate, then it might be useful to set the upper cognitive goal at Level 3 for pre-service education, and reserve the three more complex levels for the in-service experience.

There is, however, at least one other possible way to think of the levels, one to which little attention has been given as educators have worked with the taxonomies. This other way is not "instead of", but is "in addition to". What is being proposed is that at any one level of complexity, one may operate along a continuum from "naive" to "sophisticated". To illustrate, consider Piaget's assertion that a child does not have an adult concept of time until about age twelve.

This is not to say that a child has no concept of time. The problem becomes one of describing the alteration from a child-like concept to an adult concept of time. The fact that the child does not have an adult concept of time until about age 12 does not mean that we ignore time where he is concerned, but rather that we tailor "time talk" to his position on the continuum from child-like to adult, or from naive to sophisticated, and attempt to help the child become appropriately able to deal with time concepts.

In a similar way, neophytes in the education profession may not be able to evaluate teaching, for example, in a very sophisticated way. However, they do evaluate teaching, even when cautioned not to, in the sense of passing judgments. If one accepts the idea of a continuum on any one level, then it becomes necessary to identify steps along the continuum of Evaluation. We would say that the University has a responsibility for working with candidates on all levels of the taxonomy, but that in all likelihood, it will not be possible to move students to the most sophisticated point on the continuum at all levels. It may well be that for some elements, there will be no necessity for moving students beyond the level of Application. Conceivably, for some reason - feasibility or desirability - Level 3 could be deemed sufficient attainment, even at a very naive point. On the other hand, one might be required to progress to Level 3 at a very sophisticated point, or as far as Level 6 at a naive point.

Thus, before the decision is made to plan for any maximum level, it seems reasonable to explore the possible implications of the idea of a continuum at each level. Figure 1 illustrates a first attempt to spell out level 6 from a naive to a sophisticated evaluation of teaching.

At Level 6 (Evaluation) the student:

A. Observes and judges teaching as good or bad on the basis of a feeling or in relation to some teacher he has known.

B. Observes and describes teaching with objectivity and can give reasons for liking or not liking teaching - although these will not be professional and systematic reasons.

C. Uses a system such as Flanders for describing teaching; can judge the teaching good or bad in terms of Flanders.

D. Uses a variety of systems to describe teaching and can judge teaching good or bad in terms of a number of systems.

E. Has a logically derived set of criteria for good teaching - can observe teaching, analyze it according to this set of criteria and judge teaching good or bad in terms of these logically derived criteria.

Figure 1. Continuum of Sophistication

If the foregoing is valid and universal across behaviors, then it seems that to plan only as far as Bloom's level of Application in the pre-service portion of the program may leave out some behaviors with which we need to be concerned, and in relation to which the University might make a significant contribution. Indeed, if we have omitted attention to Bloom's upper-level behaviors, or to the more sophisticated behaviors on the continuum, in the pre-service portion of the program, and a teacher from that program were to become a member of a district which valued those advanced behaviors, it could be that the teacher's University work might prove insufficient in the field. That is, our work could be incomplete if we are unwilling to move the students as far along both dimensions as possible.

I suggest that Figure 2 is descriptive of the foregoing:

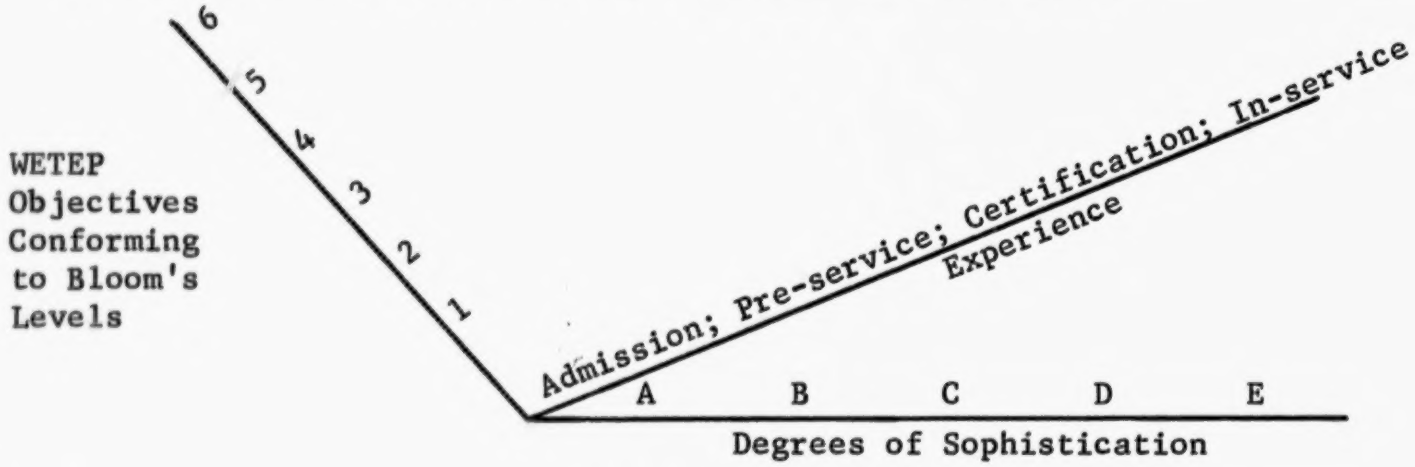

6
5
4
3
2
1
WETEP Objectives Conforming to Bloom's Levels
Admission; Pre-service; Certification; In-service
Experience
A
B
C
D
E
Degrees of Sophistication

Figure 2. Suggested Progression Toward WETEP Goals

While the solution is not simple, it seems necessary to sketch the difference between a naive beginner and a sophisticated veteran at each level, to define the steps along the continuum from admission to retirement, and then to move each candidate as far as he can go or to some minimum point. In-service education then focuses upon up-dating Levels 1 and 2, Acquisition and Comprehension of new information, and refinement of Levels 3-6, the utilization of such information.

If it is the case that affective behaviors are acquired in a way that is different from the way or ways in which cognitive behaviors are acquired, then it would seem that "learning" opportunities would also need to differ. The WETEP staff might consider a position with respect to "how values are acquired" in order to structure appropriate learning opportunities.

One such position may be described with the cliche, "values are caught, not taught." Given this, and assuming in this context that the word "values" represents all affective behavior, then those objectives in the affective domain cannot be achieved through exhortation, lecturing, or admonishment. In this connection, there is some evidence which suggests that there may be a reverse relation between the amount of information one possesses on a subject and one's attitude toward it. Further, there is also evidence which illustrates that possession of information and even the ability to evaluate it, does not guarantee a change in specific behaviors, viz., the question of smoking cigarettes. Additionally, such studies as those by Getzels indicate that student values tend to remain stable throughout educational programs in spite of attempts by educators to modify values. Finally, it appears that values change, or are acquired, slowly.

All of these affective factors are different from the cognitive behaviors.

If values are "caught", it then seems necessary to create situations in which students are exposed to values in action so that through identification with a model they may begin to take on the values or to acquire the affective behaviors sought through WETEP.

To degress for a moment, it seems appropriate to cite Iannacome's work with student teachers. In his study he found that at the beginning of the clinical experience student teachers, in their logs, verbalized the "values" taught to them in courses. They were critical of cooperating teachers' treatment of children. By the end of their clinical experience, these student teachers not only condoned the behavior of the cooperating teachers, but they engaged in the very behavior which initially they had criticized.

In a recently concluded study with cooperating teachers who had undergone intensive preparation in supervision, it was found that these teachers conducted conferences with students in much the same manner as teachers who had not participated in the 10- month program. In conference content the experimental group was somewhat different, but their verbal behavior was almost identical to that of the control group. One conclusion drawn was that members of the experimental group had achieved Level 3 in the affective domain -- they verbalized a valuing of particular types of behavior -- but their own behavior was not characterized by the value pattern they espoused. This was true in spite of much individual attention.

A case study in supervision recently presented by a supervisor of senior student teachers employed the affective taxonomy to describe 8 students. The supervisor concluded that during the 10 week clinical experience no student moved to Level 5 -- characterization by a value.

These pieces of evidence, though not "hard", illustrate some of the problems involved in incorporating affective objectives in any program. This does not, however, lessen their importance.

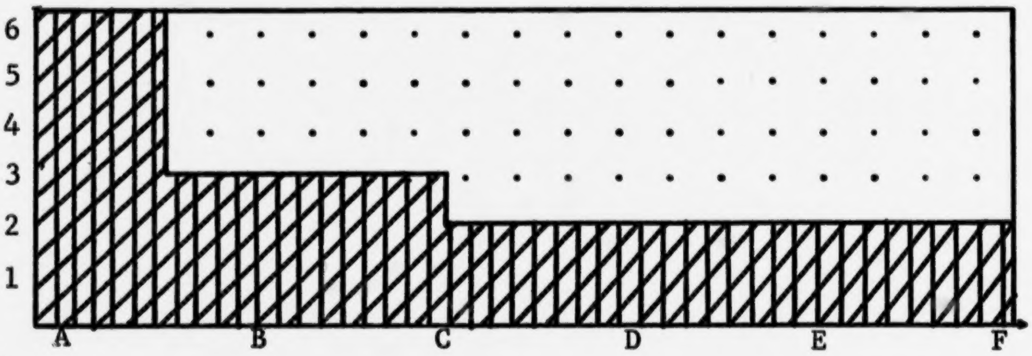
One other factor is important. Upon repeated examination of both taxonomies, an additional difference between them has suggested itself. While the cognitive taxonomy can be described along two dimensions -- simple to complex levels, and naive to sophisticated continuum at a level -- the affective taxonomy does not appear to lend itself to such description. It appears to be unidimensional. Generally, it seems upon analysis that at Level 1 -- willingness to receive -- an individual is or he is not. It is difficult to conceive a sophisticated, or naive, willingness.

In the cognitive taxonomy one can at least conceive of and describe what constitutes "naive" knowledge or "sophisticated" knowledge.

From the foregoing fragments two major points arise. First, while it seems possible and desirable to expect achievement cognitive of Level 6 at some point between naive and sophisticated, given present circumstances, to expect achievement beyond Level 3 or 4 in the affective area may be unrealistic. Assuming that Level 5 of the affective domain is desirable, then how must present circumstances be altered?

One idea is immediately suggested. Briefly, it is that faculty must associate themselves with students in ways different from those currently practiced. If students are to identify with individuals who operate upon "WETEP values" then students must have opportunities to clarify and challenge the values of the instructor as well as their own. They must have support from faculty as they work to achieve Level 5 in the affective area. Such support involves much more than holding classes in the traditional sense. The specifics of what this might mean are to be discussed in another paper.

Perhaps the following diagram will serve to summarize and further confuse the issue.



Legend

/// - student/computer-lecture-impersonal cognitive

|||| - affective - willingness to receive and willingness to respond - Levels 1 and 2

⁚ ⁚ - student/faculty contact - personal - cognitive dimensions as per diagram; Affective Levels 3 - 5.

This pattern would apply throughout the program in all areas. The assumption is that if in fact students are to be characterized by certain cognitive behaviors -- that is "able and willing" -- this pattern is essential.

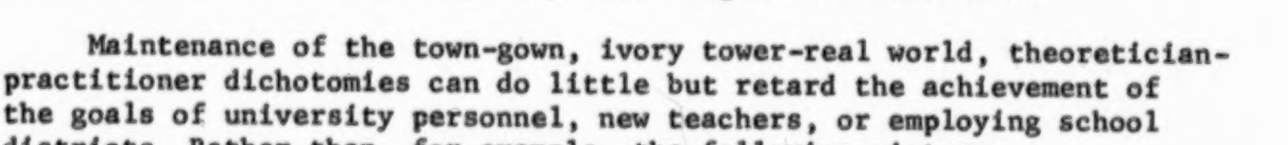
## TEACHER EDUCATION AND CURRICULUM DEVELOPMENT

### Margaret Ammons

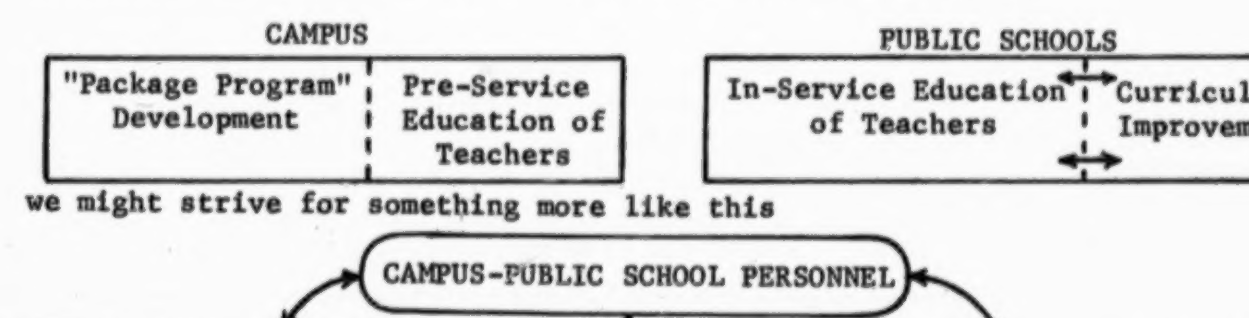
Historically, three rather basic aspects of elementary education--pre-employment education of teachers, on-the-job education of teachers, and curriculum improvement--have been seen as almost discrete ideas. The two which bear some relation to one another are in-service education and curriculum improvement. Further, the two major agencies involved in all three endeavors mentioned above have operated as in parallel play, with perhaps the same goals and aspirations but with rare perception checks to determine whether or in what ways efforts might be coordinated so as to extract from each input the maximum output. Where such conditions exist it is not reasonable to assume that campus developed projects will be implemented and tested as developed, that newly certified teachers will be prepared appropriately for the employing school system, that on-the-job education will truly equip experienced teachers to deal accurately with new ideas in curriculum, or that newest technological advances will be appropriately utilized.

To illustrate some of the foregoing, I offer the following: research shows that school systems in the process of changing curriculum typically turn to other school systems, text books, state department personnel and in some cases university consultants. Information from developers of new programs suggests that they, after a brief field test, have little further contact with the materials they produce, and therefore, have no opportunity to assist in its implementation or revision after longer periods of use. Some administrators assert that new teachers are not prepared for what they find in classrooms; some new teachers claim that they are not allowed to teach the way they were taught, or that the way they were taught is unrealistic.

Maintenance of the town-gown, ivory tower-real world, theoretician-practitioner dichotomies can do little but retard the achievement of the goals of university personnel, new teachers, or employing school districts. Rather than, for example, the following picture


CAMPUS
"Package Program" Development
Pre-Service Education of Teachers
PUBLIC SCHOOLS
In-Service Education of Teachers
Curriculum Improvement

we might strive for something more like this


CAMPUS-PUBLIC SCHOOL PERSONNEL
Pre-Service Program
Curriculum Improvement
In-Service Program

That is to say, we would substitute for parallel efforts, joint and co-determined efforts which relate all three aspects of elementary education, viz., pre-service, in-service, and curriculum improvement.

Such an arrangement would have at least seven major characteristics:

1. A partnership would exist among the University of Wisconsin, a large number of public schools, and the State Department of Public Instruction. This partnership would require two kinds of involvement: first, joint participation in the formulation of programs for pre-service teachers, for in-service teachers and for elementary school children would be essential. Roles of each group would have to be defined so that each group could make its maximum contribution. Some roles or responsibilities may be different from what is presently accepted. For example, a state department specialist in the field of reading may survey the state--schools, communities, graduates, etc.--to determine needs in the field of reading. Such needs may be described in terms of teacher qualifications, materials, local curricula, or children's achievement in attitude toward reading. Local teachers and administrators could identify specifics in the areas mentioned above. These two groups, along with a university specialist, could design a program to meet needs.

Another kind of participation in program development would relate to pre-service candidates. DPI and local school personnel might suggest areas in which preparation in reading "methods" could be strengthened.

The second kind of involvement would require a commitment by all parties to develop cooperative experimental projects at both campus and public school levels. This should not be interpreted as rubbing out and starting over. Rather this is intended as a commitment to "intelligent" progress rather than to the maintenance of the status quo by any group.

2. The second major characteristic is that responsibility for diagnosing and prescribing next steps in the program of the individual student would be shared. This can be most easily described through a recent case study. The candidate was a student in a second semester course requiring non-teaching classroom participation. After about five weeks in a fourth grade, her university supervisor, her cooperating teacher and a university faculty member conferred. The student had made almost no progress in five weeks' time. The faculty member observed the student and held a four-way conference with her, the teacher, and the supervisor. The cooperating teacher and the university personnel felt that the candidate should remain an extra three weeks in order to work on particular problems, such as planning and awareness of children. At the end of that

time the candidate would be dropped or would drop from the program, would be given additional classroom participation in student teaching, or would go directly into student teaching. At the end of the thirteen weeks, another joint observation and conference took place. The cooperating teacher had seen some progress. The university supervisor had spent extra time in helping the candidate. The cooperating teacher, feeling that another laboratory placement would not be beneficial, recommended that the candidate be placed in student teaching with certain stipulations to be communicated to the next supervisor and cooperating teacher.

3. The third major characteristic would be the existence of a regular, systematic, and short-term exchange of teaching opportunities between campus and public school personnel. Such an exchange could accomplish two ends: it would provide opportunities for demonstration teaching on the part of campus and school personnel, and an acceleration of appropriate translation of new knowledge both into teacher education--pre- and in-service--and into elementary school programs.

4. The fourth characteristic would be adoption of specific programs, e.g., clusters of schools in which candidates interested in a particular program could be placed for at least one laboratory/clinical experience. Such situations would allow thorough testing and revision of programs.

5. From these four growths, the fifth characteristic would evolve continuous colloquia for all personnel involved to allow all parties to have at least similar information and backgrounds. Local teachers and administrators could report problems, lacks, strengths, and needs in relation to new programs, while campus personnel could assist local people with preactive and interactive behaviors appropriate to new programs and similar to the background gained by candidates in the Curriculum and Instruction course work.

6. A sixth characteristic would be the requirement that students serve their first full-time teaching year in a WETEP cooperating school system. This assumes acceptable performance by the candidate to this point. School systems would make a commitment to employ these candidates for at least one year.

7. The final characteristic would be a delay of certification recommendation to the State Department of Public Instruction until after one year of full-time teaching deemed satisfactory by the local school and the university.

Short of this kind of total cooperative involvement, major improvements in either teacher education or elementary education seem doubtful. Such involvement, if honest, should bring commitment. Commitment offers more promise for progress than does lip-service.

# NEW ROLES FOR UNIVERSITY FACULTY

John M. Kean and Robert Ubbelohde

Because something is happening
But you don't know what it is
Do you, Mister Jones
--Bob Dylan

The WETEP program is to be consistent with modern systems approaches to social organization, with individualized approaches to learning, and with the uses of multiple technological resources. The development of such a program rests upon the combined knowledge, skill, awareness and utility of the university faculty that articulates and operates the program. It is assumed that such a faculty will have to be something more than is currently characterized today, a community of scholars.

The roles which a member of this community is called upon to play are determined only in part by the purposes of the program, department, or school with which he is associated. The purposes of a program, department, or school should be consistent with the goals of the university of which it is a part. While it may be the case that the goals of a university are not always immediately identifiable, given the activities carried on within its confines or under its jurisdiction, one can make certain conclusions on the base of his perceptions. Students have recently called into question the purposes of American institutions of higher learning using their perception of the university in action as a basis for their attack. Michael Drosnin, a recent graduate of Columbia University (who graduated prior to the turbulence at Columbia this past spring) maintains that,

> What the student wants is not equality with his instructors, but the assurance that courses are offered and taught with the consumer in mind.[1]

Barron's, a national business and financial weekly, reviewing the happenings at Columbia in the spring of 1968 echoed: "A university, like a well-run business, should be interested in knowing whether it is satisfying its customers."[2] Drosnin goes on to argue that the undergraduate seeks "a justification of the intellect." He maintains:

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[1] Michael Drosnin. "College Teachers and Teaching: A Student's View," The Educational Record, Vol. 47, No. 3, Summer 1966, p. 408.

[2] "Campus or Battleground? Columbia Is a Warning to All American Universities," Barron's, May 20, 1968.

> The four college years constitute a brief liberation from the daily demands of society; they represent a unique period during which the individual's mind is sufficiently free and developed that he may devote himself to intellectual advancement. Every endeavor which aids that advancement is relevant, and any which hinders it is irrelevant.[3]

This view of what the college 'ought to' be doing combined with the dissatisfaction expressed about what the college is perceived to be doing indicates that this student does not see the goals of the institution as presently including "a justification of the intellect."

More specifically, another recent critic has suggested that the American graduate school is not overly concerned with motivating or developing

> ...the capacities to interpret a large range of material, to apply the ideas drawn from one area to illuminate another, to integrate conflicting interpretations, to initiate a new scholarly direction, to insist upon doing significant work, to make sense of the mysterious, and to risk evaluative judgments.[4]

These views of what American institutions of higher learning are, are not, and ought to be doing seem to be consistent with Alfred North Whitehead's claim that,

> The justification for a university is that it preserves the connection between knowledge and the zest of life, by uniting the young and the old in the imaginative consideration of learning.[5]

The faculty of such a united group must be able to maintain itself within the university community--it must still sift and winnow--still give time to the weighing of fundamental thoughts within its domain.

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[3] Drosnin, op. cit. p. 409.

[4] Richard Kostelanetz, "The Graduate School Blues," National Review, March 12, 1968, p. 238.

[5] Alfred North Whitehead, The Aims of Education. (New York: The New American Library of World Literature, 1929), p. 97. A Mentor Book.

Equally as important is its responsibility for the development of an adequate professional education program. The unique role of the faculty within the School of Education is to set the conditions of learning so that the specific professional education will augment rather than subvert the purposes of the whole university. In other words, the faculty develops moral and social commitment and technical competence.

It is also assumed that these claims are consistent with the statement which appears at the beginning of the bulletin of the College of Letters and Science of the University of Wisconsin which claims that the University is "An Adventure for the Inquiring Mind."

Moving from assertions about the goals of the University and responsibilities incumbent upon a faculty within the School of Education to the purposes of WETEP, it has been assumed that the purposes of the latter should be consistent with the goals of the former. This suggest that WETEP must involve students in the "weighing of fundamental thoughts." IF the characteristics which a WETEP graduate should have (as stated in "Priorities for Teacher Roles Beyond 1975") are indicative of the purposes or goals of WETEP, then it may be assumed that WETEP is concerned with producing graduates with more than what Thorstein Veblen termed "trained incapacity." It may be assumed that WETEP is concerned with the "imaginative consideration of learning."

Granted the assumptions made above, it is now possible to suggest possible roles which a WETEP professor may be asked to play. The professor who is associated with a media-oriented and computer-instrumented program such as WETEP will be released from functioning as a conveyor of 'facts' or knowledge per se. As Ammons[6] has suggested, it is possible to view Bloom's cognitive domain as encompassing not only levels of cognitive behavior ordered from simple to more complex; but, it is also possible to view each cognitive level as being comprised of levels extending from 'naive' to 'sophisticated.' She has suggested that instructional objectives at simpler levels of cognitive behavior and at certain lower levels of 'sophistication' can be dealt with by man-machine technology. Instructional objectives at more complex levels of cognitive behavior and at higher degrees of 'sophistication' necessitate human interaction. (A suggested diagram taken from Ammon's paper to illustrate this idea follows in Figure 1.) Viewed in this way, the WETEP professor will be called upon to operate at those points throughout the system which necessitate human interaction. He will supervise (i.e., guide, evaluate, ascertain, discuss, and assure) an individual's movement through WETEP (at all levels of 'sophistication' and 'complexity') in an attempt to ensure that a particular individual's movement is efficient, effective, and relevant both in terms of the purposes (objectives) of WETEP and in terms of the individual. This does not suggest, of necessity, a prescribing on the part of the professor, but rather suggests that the professor is in a position which allows him to be both knowledgeable and 'objective.' It suggests, too, that the

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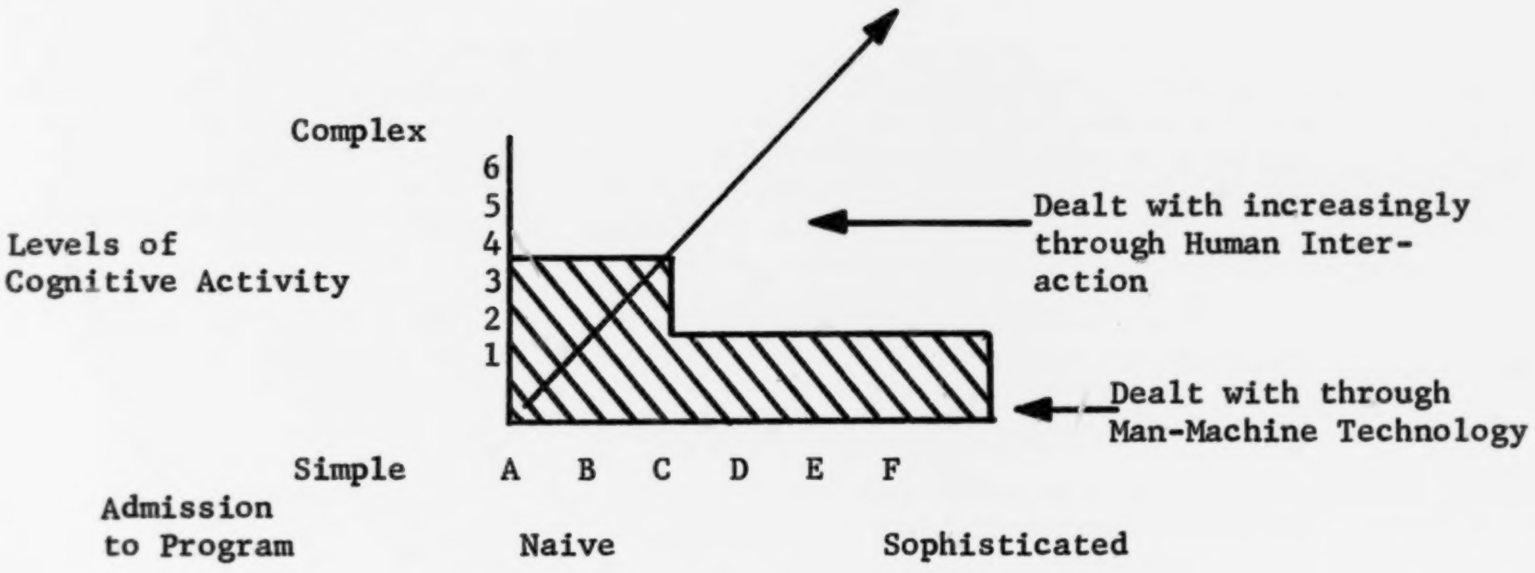
[6] Margaret Ammons, "Cognitive and Affective Levels in Teacher Education," elsewhere in this volume.


Complex
6
5
4
3
2
1
Levels of Cognitive Activity
Dealt with increasingly through Human Interaction
Dealt with through Man-Machine Technology
Simple
A B C D E F
Admission to Program
Naive
Sophisticated

Extension of Bloom's View of Cognitive Domain

FIGURE 1

professors will be more concerned with the student's competency than with his going through the sequence.

The professor will also stimulate and guide behavior on the part of a student at more 'complex' and 'sophisticated' levels within Bloom's cognitive domain and within the affective domain. This is to say that a WETEP professor will be responsible for student behavior which, as suggested above, necessitates human interaction. The WETEP professor will be the key to uniting the young "in the imaginative consideration of learning."

The program seems designed to force the development of new evaluation roles for professors. The professor, indeed, will have to think about how to develop potential, not how to guard the gates more closely. He will, necessarily, have to attend more and more to fashioning technology to the mind's purpose, as opposed to some present innovations which still seem to be trying to shape the mind to the available technology.

There are, indeed, a number of staff development and university teaching research functions which are feasible in the program that the University of Wisconsin is developing. The following points are only illustrative of the programs that might be developed.

The researcher-teacher-programmer will become only part of a professional, permanent education staff. If this program is to be viable, it needs to develop a permanent, totally committed teaching staff. It would seem reasonable to suggest that such a staff would be composed of researcher-teachers, teacher-programmers, supervisory personnel, college teaching interns, and program assistants.

Such an arrangement would also include greater opportunity for developing new staff relationships both within the School of Education and across other units of the university. New patterns seem imminently mandated by the development of the components within this system--indeed a relationship already existing in theory, but not in practice, in universities.

If these are to be the roles of WETEP professors, then certain assumptions have been made about the characteristics of the WETEP professor:

1 -- The WETEP professor should possess those characteristics which are asserted to be those a WETEP graduate should have (as stated in "Priorities for Teacher Roles Beyond 1975").
2 -- The professor should possess those characteristics asserted to be of importance for citizens of the future (as outlined in "Schooling for 1975").

The professor in this program will also have to give serious consideration to his own attitudes toward modern technology and modern media. It is plausible that he might find it valuable to move the "boob tube" out of the basement, to give more consideration to pop and jazz and to other attempts to restructure the communicative arts. The professor's office is expected to have TV, tape recorders, micro-readers, and projectors, in addition to his book shelves.

Most of all, the professor will have to rethink his ideas about academic freedom and about his own unique function in the university. Academic freedom is basic to the students' participation in the university, too. Yet currently, professors' ideas about academic freedom seem not to extend to intellectual honesty with students. They ask students to respect their discipline and scholarship, but they treat, grade, inspect and pass students through the program like slabs of beef.

The professor must provide leadership in developing ways to effect a partnership in learning between himself and students. He will need to encourage criticism of his teaching performance, readjust his programming to compensate for his failures to communicate successfully with students, develop his thinking about the partnership between schools and universities in the education of teachers, and above all, rethink his partnership in learning with his students.

More particularly, there is much about relations between modern students and professors that needs adjusting in such things as sensitivity and evaluation. Professors and students might, for instance, find it profitable to undertake in-depth T-group or sensitivity training together. They might seek alternatives to grading systems based on misunderstood sampling procedures. Measurement devices of a non-obscure and non-projective nature are needed to help professors and students come to grips with the problem to be overcome, the topic to be learned, the attitude to be modified, or the personality trait to be careful of, rather than simply to enable professors to determine guilt or innocence, successful student or unsuccessful one, or certifiable teacher or uncertifiable one.

Granted the assumption that the WETEP university faculty member should exemplify all the characteristics specified for the future teacher he is educating, certain implications follow. The university professor has in the past--out of one tradition or another--not accepted evaluation and comment on his teaching, nor has he been accepting of student interpretation and student self-integration of the areas which he has studied. Professors must encourage criticism of their performance for several reasons. Encouragement is appropriate because large numbers of students tend to accept their lot rather than to help the professors if encouragement is not requested. Criticism is assumed here to be constructive and to be a primary vehicle by which change can be effected in behavior. Even though professors should constantly engage in self-criticism and self-evaluation, they must still depend upon the feedback from their audience/receptors or those whom they try to help learn. In spite of the lack of empirical evidence for this point in much of the research on teaching, it seems to be rationally valid. They might, for instance, encourage mutual in-service education via inter-group visitation and the noting and discussing of their teaching and their clinical performance. The assertion that a WETEP professor should possess these personal characteristics is based on the assumptions that:

1 -- The characteristics of a professor influence how he will perceive his role and how he will attempt to perform his role.
2.-- Insofar as the characteristics involved imply value commitments, these values cannot be imparted to WETEP students unless they are held as values by the professors associated with WETEP.
3 -- The way the roles of the professor are performed will influence the students' perception of the purposes and objectives of WETEP and thus influence student behavior.

In short, it is assumed that the characteristics of a professor determine--in part--the purpose of a program or at least how the purpose is perceived.

Given a professor with the characteristics and roles suggested above, it will be necessary to provide him with the conditions necessary for him to operate efficiently, effectively and productively. This is to suggest that the purposes of the program, insofar as they are dependent upon the professor playing his role, are dependent upon conditions which make it possible for a professor to play his role. It is assumed that the conditions operating must allow for or provide

(1) Compensation and advancement with emphasis on teaching
(2) Material
    (a) Financial--budget appropriate for necessary materials

    - (b) Appropriate technical apparatus - computer terminal, TV, etc.
    - (c) Space and 'decor'
- (3) Appropriate instructional load
- (4) New conception of organization to replace credits, courses, requirements, etc. as now viewed
- (5) Appropriate means for in-service growth--attendance at conferences, post-doctoral work, specially designed in-service activities
- (6) Means of engaging students beyond physical limitations of campus and technical means--conferences, etc.
- (7) Working relationships of academics to schools for interns (e.g., WETEP's Full Participation Schools)[7]
- (8) Human contact rather than 'symbolic' and/or 'thing' orientation

Early in its development, the WETEP program committed itself to continuing re-assessment of the theory from which this program stems. If this is to be successful, then it seems imperative to examine the opportunities provided for WETEP professors to continue their own in-service learning of adult learning behavior, model strategies for teaching adults, and most particularly, university teaching and instructional functions. It is the responsibility of the professor to keep up, but it is also the obligation of the school and university to provide him with the opportunities for doing so. It seems desirable, for instance, to give careful consideration to regulations that require a professor to put himself on display before he can obtain support to attend professional functions away from the campus.

It is suggested, then, that the role of the WETEP professor should be determined by: (1) the purposes of the University; (2) the purposes of the program with which the professor is associated; (3) the characteristics of the professor; and, (4) the conditions under which the professor is expected to operate. Any of these factors can alter the role of the professor, and, therefore, all must be dealt with in determining and maintaining the role of the WETEP professor. These roles are suggested as consisting of: (1) the professor as 'supervisor' and, (2) the professor as intellectual stimulator and guide--in short, the professor in partnership with students.

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[7] See Carl Personke, "The Role of the Schools" elsewhere in this volume.

## THE WETEP MEDIA AND TELECOMMUNICATION SYSTEM

Charles Sullivan, Meredith Ames,
Maurice Iverson, and Mina Ghattas

### Introduction

As indicated in the project statement, WETEP is a continuation of an experimental focus on elementary teacher education. The purposes of WETEP are:

a. to provide individualization for students
b. to increase student interaction with the faculty and with participating schools
c. to provide a focus for in-service education, materials development, and research.

These considerations create a demand for handling vast amounts of information, from the most basic record keeping to the storage and recall of audio-visual information. Technology, then, will be a key adjunct to the educational program. In addition to enhancing the educational program of future teachers, it will be necessary to develop competence in both students and faculty in the use of technology and media. The Media and Telecommunication System has been developed to cover all of these considerations.

### Selection of Instructional Media

The criticial problem confronting builders of instructional programs is the identification of the area where the use of instructional media would be appropriate. Once identified, either as problem areas needing aid or, as situations that may be enhanced by media, the next major consideration is the selection of the types of media most effective under different conditions of learning. The task is a difficult one because there are not enough empirical findings to point the way for making definitive instructional media decisions. The continuing task is to identify the applications and assess the effectiveness of media in relation to the total WETEP program.

The detailed conception of WETEP objectives provides the basis for making intelligent hypotheses about media selections. For example, Allen[1] makes reference to Gagne's Conditions of Learning, and with due awareness that complete guidelines on the comparative effectiveness of various media have yet to be ascertained, he suggests a systematic charting of learning objectives in relation to instructional media types.

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[1] William H. Allen, "Research in Instructional Media and Art Education," National Art Education Association, Washington, 1968.

Adapted for WETEP purposes, Allen's evaluative grid might appear as shown in Figure 1.

As WETEP's research program develops, continuous investigations will be made concerning the relative effectiveness of the media types identified in Figure 1. Simultaneously a wide range of additional media techniques will be added to the system, including that of computer-assisted instruction and simulation.

Once the areas in which media might be used have been determined, the procedure for the selection of appropriate media will follow eight steps:

1) Stating specific behavioral objectives
2) Identifying the type of learning involved
3) Isolating the particular instructional event that will occur
4) Examining media options with reference to past findings
5) Deciding on the most effective, convenient, or economical media to be used
6) Writing specifications for the selection, preparation, or production, and for the utilization of materials
7) Field testing materials produced to verify effectiveness
8) Implementing validated materials and techniques

As with all elements of WETEP, assessment will play a vital role in evaluation and evolution of media.

In WETEP's Program Development and Research Center, a continuous study program will be maintained which analyzes data about media choices. As WETEP instructional modules are transmitted to the learner, adaptation of research findings may be applied. Then, by examining the learner response to media presentations, his reaction pattern can be charted, further aiding the task of systematically improving the process of choosing appropriate media.

## The Technological Aspect of the Learning Environment

As Figure 1 has shown, certain modes of presentation have been found to be relatively effective in attaining desired learning objectives. These modalities and their unique combinations must be taken into account when designing a learning environment.

The equipment necessary to implement the WETEP computer-managed, interactive system will create such an environment. Students will facilitate their interaction with instructional materials through the use of terminals supplied with teletypes and audio-video reception

MEDIA TYPE

| | | Still Picture | Motion Picture | Television | Audio Recording | Programmed Instruction | Printed Materials | 3-Dimensional Material |
|---|---|---|---|---|---|---|---|---|
| MODE OF PRESENTATION | Audio | | X | X | X | | | |
| | Video | X | X | X | | X | X | |
| | Manipulative Materials | | | | | X | X | X |
| LEARNING OBJECTIVES | Learning Factual Information | M | M | M | M | M | M | L |
| | Learning Visual Identifications | H | H | M | L | M | L | H |
| | Learning Principles, Concepts & Rules | M | H | H | L | M | M | L |
| | Learning Procedures | M | H | M | M | H | M | L |
| | Performing Skilled Perceptual-Motor Acts | L | M | L | L | L | L | L |
| | Developing Desirable Attitudes, Opinions & Motivations | L | M | M | M | M | M | L |

| | |
|---|---|
| L | Low Effectiveness Rating |
| H | High Effectiveness Rating |
| M | Medium Effectiveness Rating |
| X | A Relationship Between a Mode of Presentation and a Media Type |

PRELIMINARY RATINGS GIVEN FOR THE EFFECTIVENESS OF
DIFFERENT MODES OF PRESENTATION AND MEDIA TYPES
WHEN USED TO ACCOMPLISH SIX DIFFERENT LEARNING OBJECTIVES

FIGURE 1

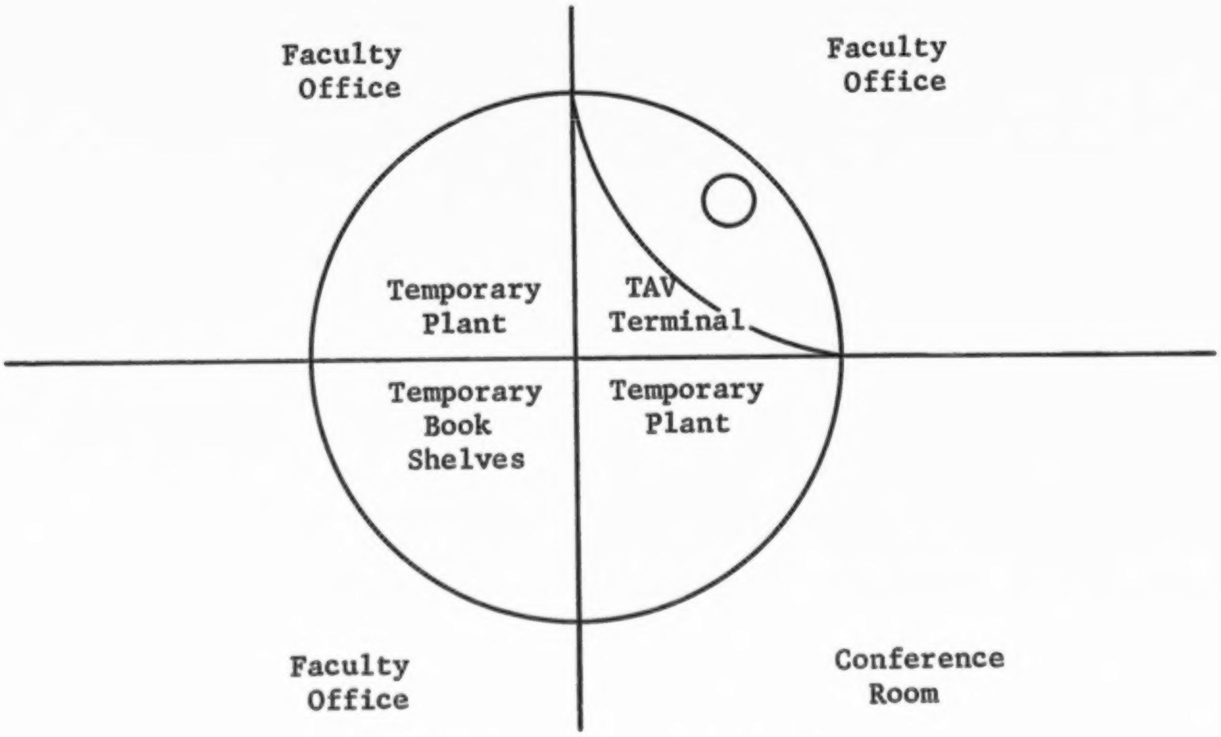
capability. Students' interaction with faculty and other students will be extensively provided through seminars and individual conferences.

A. The Teletype-Audio-Video (TAV) Terminal

The communication console used by the student in his individual carrel in the Learning Center, in participating schools, in mobile units, in other connected locations, and by instructors in their offices is a Teletype-Audio-Video (TAV) terminal. The student TAV terminals in the Learning Center are designed in units of four, fixed on a circular or oval-shaped base. The TAV consists of a silent (inktronic) teletype keyboard, a telephone (touch) dial, a large TV screen and camera, stereophonic headphones and microphone, and a selector switch. Hard copy of materials appearing on the TV screen such as computer readouts, still diagrams, and study assignments will be almost instantaneously available. The selector switch operates in conjunction with the telephone or separately to allow for any of a number of audio or video selections, or for interpersonal communications.

B. The Flexible Terminal Base (FTB)

Instructors will find their TAV terminals mounted on a circular revolving pad called a Flexible Terminal Base (FTB). The FTB will be situated at the juncture of two or more office-conference spaces, thus allowing for maximum use of the TAV's, whose number per FTB will be determined according to need. On call a person may rotate the FTB to place the TAV at his location. If substantial use is made of the TAV by two or more instructors, additional terminals may be supplied for a given FTB.



Flexible Terminal Base (FTB) Shown with One TAV in Place

FIGURE 2

## The TAVe Equipped Seminar and Media Reception Rooms

The teletype-audio-video (enlarged) seminar and media reception rooms have been designed for the meeting of groups of up to twelve persons to discuss common problems or to participate in presentations requiring group interaction. Both types of rooms will have input-output facilities. They differ in that the media reception rooms will also be equipped for simulation.

### 1. The TAVe (enlarged) Equipped Seminar Rooms

These rooms will have the same facilities available as those in the individual student consoles, except that the video screen will be large enough to be seen by the group. Speakers will take the place of earphones, and the controls for the system will be handled by a single individual making the presentation.

### 2. The Media Reception Seminar Rooms

In addition to the input-output facilities available in the seminar rooms, the media reception rooms will be arranged in such a way as to allow for simulated activities. Here an individual student may perform the role of the teacher under simulated conditions in which situations will be presented on panoramic rear projection screens and through a stereophonic sound system. His verbal and facial expressions in response to simulated situations will be videotaped for evaluation purposes.

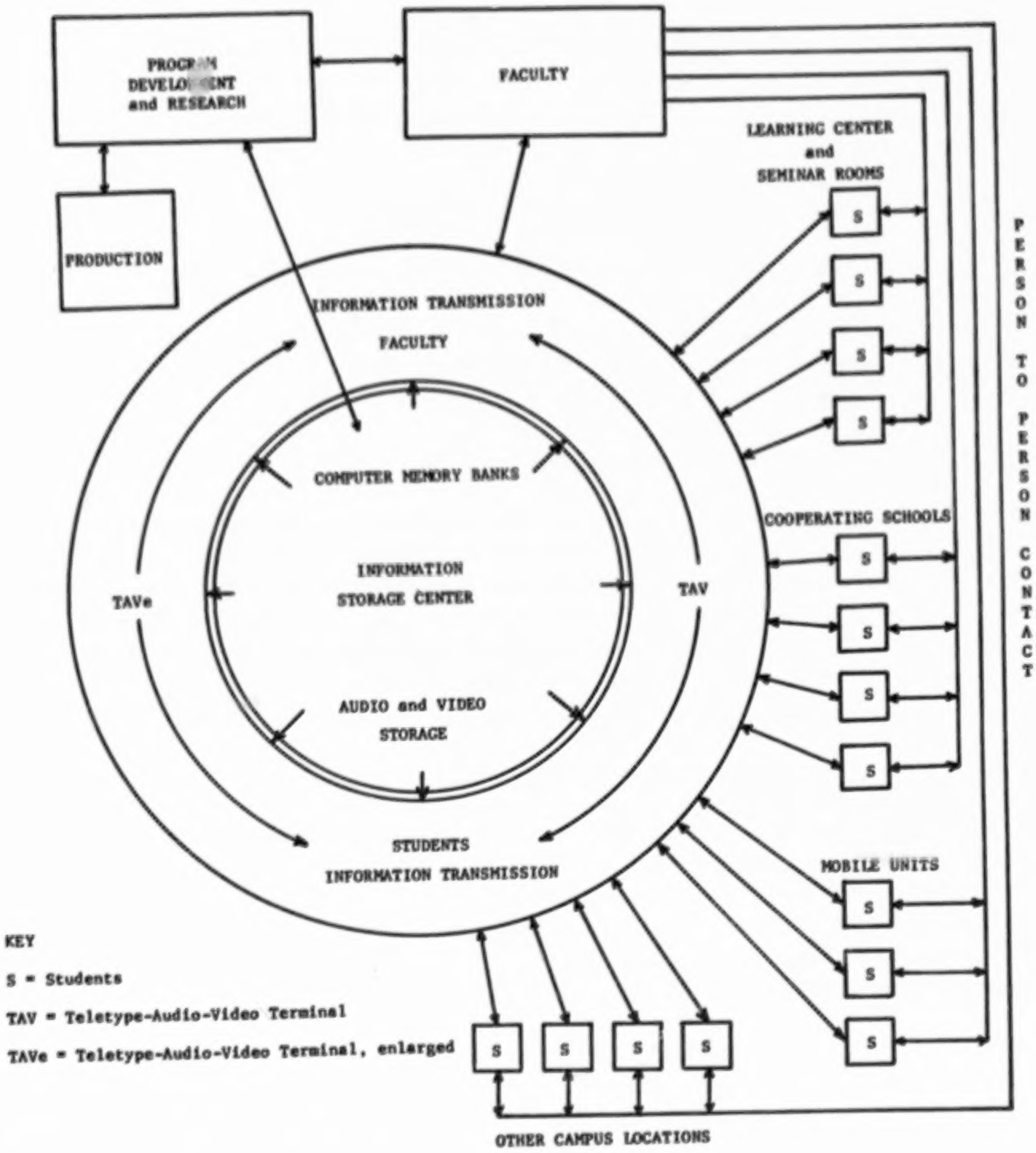
### 3. Information Storage and Retrieval

The TAV acts as the retrieval terminal for audio and video informational sources. This information will be available on audiotape, videotape, sound film, live presentations, microslides, and microfiche. Other information will be stored in computer memory banks and will be obtainable through the teletype terminal which also serves for the limited use of programmed instruction (CAI).

The dial access system will be efficient enough to provide immediate response not only for internal requests from the Learning Center or the TAV and TAVe terminals, but will also accommodate a number of remote terminals equipped for the reception of video as well as audio transmissions. It will also provide for a mixer input-output to permit intercommunication between remote points and other WETEP facilities. Portable cartridge recorders and audiotapes as well as video recordings will be available on loan to students for playback outside the WETEP facilities.

## The WETEP Telecommunication System

The WETEP Telecommunication system is illustrated in Figure 3. The center of the system provides for the storage of information of audio and video materials in a variety of forms plus digital information


PROGRAM DEVELOPMENT and RESEARCH
FACULTY
PRODUCTION
LEARNING CENTER and SEMINAR ROOMS
S
INFORMATION TRANSMISSION
FACULTY
COMPUTER MEMORY BANKS
INFORMATION STORAGE CENTER
AUDIO and VIDEO STORAGE
TAVe
TAV
STUDENTS
INFORMATION TRANSMISSION
COOPERATING SCHOOLS
MOBILE UNITS
PERSON TO PERSON CONTACT
OTHER CAMPUS LOCATIONS
KEY
S = Students
TAV = Teletype-Audio-Video Terminal
TAVe = Teletype-Audio-Video Terminal, enlarged

A SCHEMATIC OF THE WETEP TELECOMMUNICATION SYSTEM

FIGURE 3

in the computer system. These information sources are available to students and faculty through interactive teletype-audio-video (TAV and TAVe) terminals.

Faculty members are in direct communication with the information storage in two ways: first, the faculty has ready access to this central system at any of the interactive terminals; second, the faculty is directly responsible for program selection, development, and research associated with the materials stored in the system.

Students have direct access to the information storage center through interactive terminals from four kinds of locations: 1. Learning Center and seminar rooms, 2. cooperating schools, 3. mobile units, and 4. other campus locations.

The diagram in Figure 3 also indicates the direct person-to-person contact between students and faculty either within the communication system network or through the individual conferencing and small seminar meetings as a part of the WETEP instructional program.

## Conclusion

Learning results from experience; experience is the interaction of the human energy system with other energy systems--man, media, environment, and machines. WETEP's formula for achieving the objectives stated in its various elements depends on the total involvement of the learner under close instructional supervision and guidance. WETEP insures group interaction among students and with professors, individually or in groups, on a person-to-person basis and by remote contact. Associated with this personal interaction in the WETEP individualized learning environment is mediated instruction, assessment, and guidance made possible through computer-managed techniques.

# WETEP AS A RESEARCH FACILITY

M. Vere DeVault and John M. Kean

An integral part of the development of WETEP is the provision for and facilitation of research in teacher education. The strategy used by the WETEP staff in the planning and implementation of this program offers unique possibilities to conduct research on both its process and its outcomes. The systems model which essentially enables the staff to manage the flow and the specifications for all parts of the program will enable the staff to gain much in the precision and elegance in the design of research. The WETEP research facility intends to integrate its program research to gain a better understanding of the total environment effects upon teachers' competence as well as the interacting effects among elements upon this competence. Utilizing the power of the systems approach questions about relationships and causes can more effectively be investigated in WETEP than is possible in present teacher education programs.

Although an early task in the development of WETEP has been to identify a set of specifications for a model elementary teacher education program, staff members recognize the impossibility of specifying in certain terms the nature of an experimental program to be developed over a period of several years. This is particularly true inasmuch as most of the WETEP program inputs have not yet undergone testing in development programs. The elementary teacher education program was established on this campus in about 1950 for the purpose of providing an opportunity for the development and evaluation of model teacher education programs. The experimental elementary teacher education program in the early Fifties involved a four semester sequence which included continuous observation and participation activities in local schools, by the late Fifties an interdisciplinary approach, and in the Sixties an intern-in-team organization. WETEP, then, is an extension of this experimental heritage and is viewed as a feasibility study in many aspects of teacher education. The broad parameters of WETEP have been identified as individualization in a variety of dimensions. These dimensions include choice in the establishment of professional objectives by the student, student choice in the selection of instructional strategies within WETEP modules, and choice in the pace and sequence with which students progress through learning activities. Under the systematic guidance and counseling of faculty, the student increasingly makes independent decisions about his own teacher education program. In a more specific manner a number of aspects have been identified as foci for planned feasibility studies.

Systems Approach to Instruction. In the development of WETEP, great attention has been given the design of an instructional system which will organize and interrelate the many learning and instructional tasks of an effective educational program. A systems design will do much to guide and facilitate the feasibility studies which are to be made concerning all aspects of WETEP. Although the application of systems approaches to academic instructional problems has been relatively nil, the literature is increasingly filled with discussions of systems approaches relevant to university teaching and learning concern. However, few of these discussions have considered the myriad of details involved in the delineation of a set of specifications for a systems approach to instruction in teacher education.

WETEP provides an opportunity to examine many problems associated with the implementation of a systems approach for teacher education. There are those educators who insist that systematic approaches to instruction characterize the best efforts of teachers and professors in present practice. Others insist that system approaches to instruction involve highly detailed organization of every aspect of the system including the human instructor, guide, or aide. Some place between these two extremes we are likely to find effective implementation of systems approaches to instruction. WETEP feasibility efforts are designed to identify which of these implementation patterns are most effective.

Objectives and the Bloom Taxonomy. In the years ahead the WETEP faculty will attempt to investigate the feasibility of using statements of objectives in a variety of forms. These investigations will lend direction to the continuing development of instructional modules, in the guidance of learners, and in the assessment of progress. The WETEP faculty has developed a substantial set of objectives which are consistent in form within elements but which vary considerably in form from one element to another. Efforts to determine the utility of objectives stated in various ways will be one aspect of the feasibility study within WETEP. Additionally, an attempt will be made to determine through research the degree to which students can appropriately self-direct, self-pace, and self-select learning objectives that are appropriate in view of their characteristics and the characteristics of pupils they teach.

The Role of Technology. In the use and evaluation of technology, schools and universities have often lagged behind other institutions in our society. Indeed, as the product of the school is the education of a human being, judgments concerning the effectiveness of any given procedure are difficult to make. No doubt, the effectiveness of the technologically oriented school will not in the next few years reach the level anticipated by many proponents of computers, media sources, and systems approaches to instruction. WETEP projects the hypothesis that technology can increase the effectiveness of our educational efforts. This hypothesis is based on the assumption that the developmental direction technology takes in teacher education should be the concern of the professional educator who would provide leadership to schools in the improvement of instruction in the decades ahead.

Can technology be used in a way which frees the instructor for more meaningful faculty-student relationships? What kinds of tasks within the total instructional system can best be assigned to a technological facility? How can the flexibility in program development be enhanced through the utilization of technological resources? How can technology help us avoid the fate of the student in the class of the steoretype professor who each semester reads from his dog-eared notes originally prepared in outline and in substance a decade earlier? These are but a few of the many questions about the role of technology in education which are to be a part of the WETEP feasibility study.

The Relation Between Universities and Business. What should be the working relationship between universities and business? At the University of Wisconsin, it has been said that the boundaries of the University have been established through the relation of research and development activities on the campus with industries and business in Wisconsin and throughout the country. What should that relationship be for education? How can that relationship be established?

Working relationships between universities and schools and between universities and business are not established *a priori* but are growth products. As exploratory cooperative efforts get underway, relationships are established so that the nature of the interaction unfolds in progress. For example, the nature of university-school relationships within the Wisconsin Improvement Program are extensive and state wide. These relationships were not described ten years ago except in very general terms. Today they exist and continue to grow and to change as requirements dictate in the same manner in which they have unfolded during the past decade. A major feasibility study of WETEP is concerned with the viability of an unfolding university-business relationship in education.

Nature of the Cooperating School Relationship. WETEP as it is presently envisioned will require extensive collaboration between the University and local schools. Initially, three kinds of school relationships have been identified as appropriate for the purposes of WETEP. In one group, schools will be identified as full-participating partners with permanent relationships established for the purposes of intern placement, curriculum development, and in-service education for school faculty. In a second group, schools will function in a cooperative relationship with WETEP for intern placement and for in-service education but will maintain independent responsibility for curriculum development. Schools in the first and second groups will have permanent technological installations for continuous communication between schools and on-campus activities. In the third group, schools will provide placements for interns and faculty will participate in in-service activities which will be provided with WETEP instructional modules serviced by mobile units. These mobile unit schools are expected to be particularly useful in working in Wisconsin schools with a predominantly Indian pupil population.

One feasibility study within WETEP, then, is that of determining over a period of time which of several kinds of university-school relationships are most useful to the University and to the schools. Are some kinds of relationships more feasible for some types of schools than others? In what kind of university-school organization can in-service education as an adjunct to teacher education be most effective?

Length of Internship. Whether future teachers intern a semester, a year, or for some other length of time is a question to be raised by WETEP faculty. Within the goals of the teacher education program, will interns meet minimum performance criteria and then leave the school setting or will they serve for a specified period of time in the school and then extend their individual expertise to whatever extent possible within any given time period? The WETEP instructional system with technological support may make it possible to extend the internship to a full year or to shorten it to a period of time less than one semester. WETEP instructional modules will be available to interns at their school location and may serve instructional needs as they meet real problems in the schools rather than separating methods on-campus study from methods in-school practice. The length and character of the internship, then, represents another major feasibility study within WETEP.

Improved Guidance Roles for Faculty. At least two dimensions of faculty role will be tested for feasibility study within WETEP. Presently, faculty roles are often seen as largely those of transmitting information and managing classroom and instructional activities. It is possible that within WETEP, information transmission roles for faculty will be seen as less important and that management roles, similarly, may be less the responsibility of faculty than they have been in the past. Faculty roles which emphasize the guidance function may become an increasingly important focus of faculty participation in the instructional process. Perhaps even more important will be the contribution of faculty serving as model scholars. Presently, it is thought that students do model after faculty and cooperating teachers but little attention is given this modeling behavior. Within WETEP the role of faculty as a scholar searching for improved ways of working with students, of designing instructional modules, and of serving effectively in a consortium of human and technological resources for learning is expected to have an impact on the way the student sees his role as a teacher in the elementary school and as a scholar searching for improved instructional roles. In addition to the study of the feasibility of various faculty roles within WETEP, the frequency and the nature of faculty-student contact will be extensively explored as will the manner in which students express their choice for various kinds of contact with the instructional faculty.

## Conclusion

A few of the major feasibility studies within WETEP have been identified in this paper. Others, as yet unidentified, will be a part of the general feasibility nature of WETEP. The essential point to be made at this time is that the entire WETEP faculty recognizes that any program which emerges from the WETEP specifications can expect to meet with periodic successes only as it develops under the careful scrutiny of a concerned staff. The research facilities, the continuous feedback systems designed for WETEP, and the excellence of the WETEP faculty supports the quality of this continuous careful scrutiny which is so essential to the ultimate success of WETEP.

The key to the whole WETEP design is continuous assessment of the program process and the study of the teachers who have used the learning situations in WETEP as part of their education. It is expected that WETEP will provide the opportunity to integrate many of the fragmented research endeavors of the past for the direct improvement of educational opportunities for both children in the elementary school and the teachers who work with them. In addition to implementing curriculum and psychological research, researchers in this program extend the efforts directly to the continuous improvement of the environment designed for the education of teachers.

# ASSESSMENT PROCEDURES FOR WETEP[1]

T. Anne Cleary, Robert L. Linn, and Donald A. Rock

## OVERVIEW

The central purpose of testing in WETEP is effective and continuous diagnostic and prescriptive feedback for each student; therefore, it is necessary to radically depart from current methods of test construction and administration. In the WETEP program sequential branching tests will be presented to students at remote terminals under the direction and control of a central processing unit. Use of computer-based testing will eliminate mass testing administration: each student will be tested on an individual basis at his own speed and convenience at one of the Teletype-Audio-Video terminals.

A large body of test theory and method has been developed for the conventional test in which all examinees are presented with all items. Much of this work is not directly applicable to the more flexible sequential test. Previous formulations must be adapted and new theory and method developed.

The proposed program of research is concerned with computer-assisted testing modes and strategies. Research is proposed in three major areas:

I. Design and Evaluation of Sequential Tests

A. Structure of Sequential Tests

Branching tests previously developed from artificially scored data will be administered under actual sequential testing conditions to determine the generality of previously obtained results. (Cleary, Linn & Rock, 1968a and b; Linn, Rock & Cleary, 1959) At the same time, a model for sequential tests will be developed to make item selection and branching strategies more efficient. Newly developed sequential tests will be evaluated with respect to both standard psychometric criteria and criteria better suited to the unique characteristics of the sequential tests.

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[1] The basic research outlined in this paper has been proposed to the Committee on Basic Research in Education for funding.

Various nonpsychometric aspects of computer-based tests will be investigated. The effects of the testing method on student attitudes and motivation are especially important in CAT and will be systematically evaluated within WETEP.

### B. Items and Types and Formats

The use of computer-assisted testing for the administration of more complex item types than presently feasible with paper and pencil testing will be investigated. For example, an evaluation will be made of problem-solving items in which the student can request, or be given, additional information. At a more sophisticated level, items in which the student uses the capability of the computer to solve the problem will be investigated.

### C. Response Types

Variations in the type of response requested of the student will also be investigated. In particular, response methods that enable the student to indicate his partial knowledge by means of subjective-probability procedures will be evaluated.

## II. Implementation of Testing Program for WETEP

It is expected that as parts of the proposed program of research in computer-based testing are completed and field tested, they will be implemented operationally throughout WETEP.

As curriculum modules are developed, programmed test procedures will be developed to fill the evaluation requirements: assessment procedures can be developed from the statements of behavioral objectives. As the total WETEP system evolves, more complex procedures will have to be developed; the preassessment measures of a number of modules might be combined; information from the University records will be incorporated into the decision procedures; and general evaluation procedures which would allow the student or faculty advisor to request a general evaluation of the student's progress will be considered.

## INTRODUCTION

Testing, as we have come to know it, has entered a period of transition. In the past, narrow-range unidimensional aptitude and achievement tests have been used primarily as selection devices. The substantially unchanging array of educational offerings has led to testing programs which have been relatively static in both goals and function.

Central to WETEP is individualized professional education for students characterized by a wide range of talents and goals. This diversity firmly suggests that the emphasis in evaluation be changed from selection to placement and diagnosis.

Our present methods of test construction and administration must be reassessed with reference to the much broader functions required by the purposes of WETEP. Present group tests have questionable utility in the assessment of students who vary widely along a number of dimensions and who have discrete individual goals. Any precise estimate of an individual's position on all of these dimensions would require lengthy group tests containing many items which were inappropriate for any one individual. Large numbers of inappropriate items are wasteful of student time and may even reduce the precision of the measurement. To eliminate these problems, it is desirable to "tailor" the test to each student's ability level, educational history, and educational goals. This approach, of course, would be impractical within the limitations of our present group administration procedures. The use of the item-response history to direct the student to items more appropriate to his ability level and educational history allows the test user to take advantage of many of the benefits of individual test administration while retaining most of the advantages of conventional group testing.

In the WETEP system students will be progressing at their own rate through a large variety of educational modules. Adequate external control and direction of student progress requires the dynamic measurement procedures. Computer-assisted testing will make possible the presentation of different but comparable tests to students as they arrive at a given assessment and resultant decision point. The standards for that decision point may not be the same for all students. For example, students with specialization in various areas may be required to meet different standards on a given module.

Assessment of students in the WETEP system will begin in the input component where University records will be interrogated to obtain information on the student's abilities, experience and educational goals. This information will be continually updated as students progress through the modules. Thus, at any point a student's progress and readiness for other modules can be readily determined.

The prerequisites for any module will be assessed by interrogating the experience record and, if necessary, administering an individualized diagnostic test. Within a module, curriculum embedded measurement procedures will monitor the student's progress and provide diagnostic information for both the instructor and the student.

## Objectives

The proposed research is concerned with computer-based testing strategies for WETEP. It is assumed that computer-based testing has potential advantages that could make conventional testing procedures obsolete. If computer-assisted testing is to be economically practical in the near future, it is time now to initiate beginning research and development programs.

The flexibility afforded by computer-assisted testing (CAT) raises many questions about the most efficient testing procedures and strategies. Unanswered questions can be outlined in three major areas:

A. Structure of Sequential Tests

1. Decision Models
    - What is the most efficient number of branching points given the psychometric characteristics of the components?
    - What kinds of decision rules should be used to direct examinees to appropriate items or terminate testing?
2. Item Selection and Scoring
    - What parameters are most relevant for the selection of items for sequential tests?
    - How can the maximum amount of information be obtained from a given item? What use should be made of distractor information? How should the items be scored?
    - How should item scores be weighted to form a total score?
    - Does analysis of response patterns yield additional information?
3. Evaluation
    - Are sequential tests superior to conventional tests in terms of the standard criteria of reliability and validity?
    - If consideration is given to the utility of the decision, are sequential tests justified?
    - What are the attitudes of examinees toward computer-based testing?
    - What effects do these procedures have on the motivation level of the examinees?
    - How can test security be maintained?

B. Items

1. Can items other than standard multiple-choice items (for example, complex problem-solving items which require man-machine interaction) be used effectively?
2. What are the effects of various types of feedback during the testing process?
3. Can incorrect responses be used in diagnosis of particular types of deficiencies?

C. Response Types

1. Would the collection of additional information, such as response latencies, improve the effectiveness of the measurement process?
2. Are examinees able to indicate partial knowledge through subjective probabilities or confidence ratings? If so, do these more complex responses result in better measurement?

## BACKGROUND

### Design and Evaluation of the Structure of Sequential Tests

Tailoring tests to the ability and achievement of the individual WETEP student is a necessity for an individualized program of study. When conventional group tests are used for a heterogeneous group of examinees, we find that many test items are too difficult for the least capable examinees, that many items are too easy for the most capable examinees, or both.

Within the framework of programmed instruction, the notion of a branching program is certainly not new. But as soon as the emphasis is changed from instruction to testing, one finds that relatively little consideration has been given to branching. This undoubtedly is due, in part, to the fact that the advantages of branching tests are not readily demonstrated with items intended for conventional tests.

The type of programmed tests considered here for WETEP could lead to great efficiency in the evaluation program by minimizing the student time necessary for the assessment of any one ability or skill and thus making feasible the use of a broader range of measures. The time and cost of scoring could possible be reduced significantly. Reliability per test-time unit might be increased by exposing the student only to items of appropriate difficulty. In a test with only items of appropriate difficulty, the component of unreliable variance which is due to random guessing should be reduced, and examinee motivation should increase. If it is no longer necessary to give all students the same test, it also would be possible to vary the accuracy of measurement at different points along the scale. For example, if students above a certain point were to be selected for a treatment, greater accuracy of measurement could be obtained for those students whose scores were near the cutting point.

Programmed tests can be viewed as containing two major sections: (1) A routing section which contains the branching necessary to direct the student to the appropriate items, and (2) a measurement section which contains a short test with the item difficulties concentrated at the appropriate level for the student.

Clearly there can be great variation in the extent to which the testing time is allocated to either of these two sections. One extreme variation is that in which there is no routing section and all students take the same measurement test: This first case has been thoroughly investigated, since it is currently the most commonly used testing procedure. Another extreme is the sequential test in which the routing section alone is used to determine the students' final status (ie., branching throughout the test). A discussion of several studies which lend support to the use of sequential tests follows.

A dissertation by Patterson (1962) represents one of the more comprehensive attempts at investigating the advantages of sequential tests. Patterson used probability models and hypothetical populations for his analyses. In comparing the sequential branching tests with conventional test results, he found that the sequential test discriminated better at the extremes than did the conventional test.

Several members of the U. S. Army Behavioral Science Research Laboratory have followed the general approach taken by Patterson. Particularly relevant are Technical Reports by Waters (1964) and by Bayroff and Seeley (1967). As did Patterson, Waters used a probability model and hypothetical population to simulate a branching-test situation. In her work, Waters assumed a normal distribution of underlying ability and uniform tetrachoric item intercorrelations of .64. She found that the branching test had a higher correlation with underlying ability than any of the conventional tests which she investigated. It should be noted, however, that item intercorrelations used by Waters were higher than would be achieved in most practical situations.

Bayroff and Seeley (1967) administered a verbal and an arithmetic-reasoning branching test to 102 subjects. The branching tests were presented on a teletype machine, and subjects responded by pressing an appropriate typewriter key. The branching tests consisted of either eight or nine items depending on the particular branch followed by an examinee. Branching was based on item difficulty. They also administered a conventional 50-item verbal test and a 40-item arithmetic reasoning test. The correlations between the branching tests and their conventional counterparts were .78 and .74 for verbal and arithmetic reasoning respectively. It was estimated that a conventional verbal and arithmetic reasoning respectively. It was estimated that a conventional verbal test of 16 items and an arithmetic reasoning test of 19 items would be required to achieve the results observed for the branching tests.

Hanson (1968) also has reported some promising results of a branched physics test for two small samples of students. In the first study he investigated four scoring procedures and found that a scoring system that gave greater weight to difficult than to easy items resulted in the highest validity for classroom grades in physics. The sample size in this study, however, was only 56, which is insufficient for any very definitive comparison of scoring procedures. In both studies, the branched test had validities that were better than a classroom test or a standard ability test.

An intermediate type of branched testing was investigated by Angoff and Huddleston (1958). They found that the two-stage test was technically superior to a single test, but the margin of superiority was not sufficient to justify the adoption of the procedure in view of the administrative problems that would be encountered. At that time, the possibility of CAT facilities was quite remote. Also, their focus was upon achieving an increase in reliability and validity rather than reducing testing time while maintaining a given level of reliability and validity. With instruments of high reliabilities the latter goal is more obtainable.

Seven branched-test procedures have been developed and investigated using existing item-response data on 190 verbal-type items for 4,885 students (Cleary, Linn, & Rock, 1968a, 1968b; Linn, Rock & Cleary, 1967, 1969). The students responded to the test items in standard paper-and-pencil format, but the branched tests were scored as if the student had responded to the items in the order implied by the simulated test. Five of the programmed test methods consisted of two major sections: (1) a routing section and (2) a measurement section. Approximately the same number of items were used for each of these two major sections in all five cases.

1. Two-stage routing test: Ten items which were answered correctly by approximately 50% of the original sample were selected. Scores on these 10 items were then used to divide the sample into two ability groups of approximately equal size. The process was repeated for each of the two subgroups yielding a total of four groups.

2. Broad range routing test: Twenty items that had an approximately rectangular distribution of item difficulties over the observed range (.15 to .91) were selected. The total number of correct responses on these 20 items was then used to divide the sample into four ability groups of approximately equal size.

3. Group-discrimination routing test: The total number of correct responses on the 190 items for each examinee was used to form four groups of examinees of approximately equal size in the original sample, and the proportion of subjects choosing the correct alternative to each item was computed within each of the four groups. The 20 items that had the largest ranges in the mean item scores from the low to the high group were then selected. The total number correct for each examinee on the selected 20 items was then used to form four groups of examinees of approximately equal size.

4. Four-group sequential item sampling: The 23 items with the highest point-biserial correlations with total test scores for the original sample were selected and arranged in decreasing order of the point-biserial correlations. (Twenty-three items were chosen in an attempt to make the average number of items scored for each person approximately 20). On the basis of total test score, the sample was divided into four groups of approximately equal size and the average proportion of correct choices across the above 23 items, $\overline{P}_g$, was computed for each group, g. For any given subject, the 23 items were then

scored one at a time until the subject was assigned to a group with a fixed predetermined risk of misclassification or until all 23 items had been used (see Cleary, et al., 1968a for a detailed description). The procedure used to route individuals into groups falls within the framework of the sequential sampling procedures developed by Wald (1950) and by the Statistical Research Group (1954); the specific procedure used was developed by Armitage (1950).

5. Three-group sequential item sampling: This method is a modification of the four-group sequential and differs from it in two respects: the routing section was used to create three rather than four groups, and the maximum number of items scored in the routing section was 20 rather than 23.

To develop the measurement tests, within-group point-biserial correlations between items and total test score were computed for each of the three or four ability groups of the original sample (groups formed on the basis of total test score). For each of the groups, the 20 items with the highest within-group point-biserial correlations (excluding the 71 items that had been used for any of the routing tests) were selected for the measurement test.

The last two methods differ markedly in their basic approach. They were modeled on a complete branching-tree design rather than a routing section followed by a measurement section.

The sixth test was called the 10-item branching test. In this test branching occurred after each item according to whether the item response was correct or incorrect. The same item was scored as the first item for all individuals, but the second item was a somewhat more difficult item for those who answered the first item correctly and an item was a somewhat easier item for examinees who answered incorrectly. This procedure continued until a total of 10 items were scored for any given individual.

The last programmed test was the item-blocks branching test. This second branching test was quite similar in design except that a total of 25 items were scored for each individual and branching occurred after each block of five items instead of after each item. The same block of five items was scored as the first five items for all examinees; then those examinees who answered three, four, or five of the first block of items correctly had a block of five somewhat more difficult items scored as items 6 through 10, and examinees who answered zero, one, or two of the first block correctly had a block of five somewhat easier items scored as items 6 through 10.

Against the criterion of the 190-item total test score in the cross-validation sample, the branched tests were found to be only slightly superior to the shortened conventional tests. However, the branched tests had correlations with the outside criterion tests that were substantially higher than the corresponding shortened conventional tests. It was estimated that a test which was parallel to the 190-item total test would have to be 3.36 times as long as the best branched test to have an equal median correlation with the outside criterion tests.

Although many questions remain unanswered, the results of the studies discussed above suggest that it may be possible to achieve significant improvements in the predictive accuracy of tests through the use of branched testing procedures.

There is a substantial body of literature concerned with strategies of sequential decision making. Sequential procedures that are applicable to the psychometric situation can be divided into two main categories. (Rock, Barone & Boldt, 1968).

1. The multistage sequential procedures developed by Wald (1950) were originally developed for industrial inspection procedures but have been applied to the sequential testing situation (Linn, Rock, and Cleary, 1969). However, the appropriate use of these techniques assumes that each additional bit of information sampled is an independent and parallel observation. That is, the repeated sampling is from a population of items which are equivalent with respect to both content and difficulty.

2. The second type of sequential testing involves the factorially complex prediction model. Information gathered at stage one may be measuring some ability relatively unrelated to that measured at stage two, but both types of information are related to the same criterion measure. In general, this two-stage selection procedure is directly analogous to the single-stage battery or regression procedure having two independent variables.

Experience in the industrial areas suggests that sequential procedures obtain a level of accuracy of decisions with about half the amount of testing time required by a single-stage plan. However, such gains may not be realized in the psychometric area, since the accuracy of measurement is considerably less. Arbous and Sichel (1952) report a two-stage "pre-screening" procedure for personnel testing. They report noteworthy savings in testing time even though their solution is not optimal, i.e. rather than both accepting and rejecting at the first stage they only reject. A better solution would, of course, include accepting as well as rejecting some applicants at the first stage, while postponing decisions concerning the remainder of the candidates until information is gathered at the second and terminal stage.

Although there has been considerable interest in the various philosophical and statistical problems associated with decision making, there have been few or no studies reported in the literature concerning the application of decision theory to psychometric data. There are probably two reasons for this state of affairs: (1) the payoff parameters or utilities associated with the outcomes of psychometric de-

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cisions are often difficult to state explicitly beforehand, and (2) the mathematics involved is often quite cumbersome.

Cronbach and Gleser (1965) do provide a mathematical solution to the two-stage sequential selection problem. Their approach requires a knowledge of the utilities that accrue to an organization as a result of using tests to select candidates. The most complete lack of empirical studies in the literature attests to the fact that such cost-accounting procedures may indeed be difficult to apply to day-to-day testing procedures. Only two relevant empirical studies are mentioned in Cronbach and Gleser's book, and both of these only attempt to apply "dollar criterion" information to the much less complex single-stage selection model.

## Item Types and Formats

The potential advantages of using computers for testing WETEP students are probably to be derived from exploiting some of the unique capabilities rather from using such hardware to do what can be done by other means. The use of computers to make sequential branching decisions regarding the items or sets of items to be presented is one way of using the capability of a computer to modify the basic nature of a test. Another obvious use of the unique capabilities of a computer testing device is to modify the nature of the test items.

It would be possible to use the interactive capabilities of a computer-based system not only to determine the items to be presented, but also as an essential component of the items themselves. The problem-solving model is an example of an interactive exchange between the student and the machine which might enable better measurement of vitally important skills. Interactive exchange about simulated classroom situations is a possible application.

Attempts have been made to administer this type of test item using paper and pencil test materials by using the tab-item technique described by Glaser, Damarin and Gardner (1954) or some modification of this technique. McGuire (1967) has described one of the better developed applications of this technique stemming from the work at the Center for the Study of Medical Education. However, there has been relatively little work done with this type of problem in large part because it is a rather cumbersome and expensive procedure. In a recent evaluation of a patient-management-problem for possible use as part of the certification examination of the American Board of Orthopedic Surgery, Nattress (1967), recommended that the problem not be included because of invalid scores caused by candidate errors in following instructions. Such procedural problems could readily be eliminated by the use of a computer-assisted testing system.

## Response Types

Use of computer-assisted testing will make possible a new flexibility in response types and test-taking conditions. The WETEP student will not be restricted to conventional response types. If students are tested at individual computer terminals, it will be a simple matter to collect additional response information, such as response latencies, along with the response choice for each item. Whether or not this information would be valuable is an open question, but one that is amenable to empirical investigation. It is conceivable that latency information could be useful in adding prediction, determining item difficulties, making branching decisions, or providing diagnostic information about the student.

The collection of response latency data involves only a minor expansion of the typical multiple-choice measurement procedure. A more fundamental change in the measurement procedure would be one that asked the examinee to give a different kind of response in place of the typical "best" alternative. Guessing has long been a concern in the use of multiple-choice testing procedures. Early studies focused on the effects of modifications in the instructions and scoring formulas upon the performance and guessing behavior of examinees (see for example Ruch and Degraff, 1926; Wood, 1926; Swineford, 1938, 1941; and Gritten and Johnson, 1941). Clearly, as was recognized by Cronbach (1946, 1950), examinees do not guess at random when they are less than certain of the correct alternative. Intelligent guessing on the basis of partial knowledge is indeed an important aspect of "test-wiseness" (Stricker, 1967).

Dressel and Schmid (1953) suggested a modification of the usual multiple-choice measurement procedure which was aimed at extracting more information about an examinee's partial knowledge on a given item. Their procedure requires an examinee to select all the alternatives that could be correct. In a similar vein, Coombs, Milholland, and Womer (1956) proposed a logically equivalent measurement procedure wherein an examinee responds by marking all the alternatives that he thinks are wrong. Thus, an examinee that can correctly mark one alternative as wrong exhibits some knowledge but less than one who correctly marks two distractors as wrong. A four-alternative test was scored by giving one point for each distractor that was marked wrong and minus three points for each correct answer marked wrong. Although the method of Coombs, et al., is intuitively appealing as a means of extracting more information about an examinee's partial knowledge, the empirical results showed only a small gain in reliability and negligible gain in validity when compared to the conventional response method with zero-one scoring.

More recently, de Finetti (1965) has proposed a general set of measurement procedures, based on Baysian notions of subjective probability. Instead of responding right or wrong, an examinee would indicate his degree of belief that each alternative is correct. De Finetti describes a large number of measurement procedures that ask the examinee to indicate, with varying degrees of precision, his degree of belief or personal probability that each alternative is correct.

Shuford, Albert, Messingill (1966) argue that information about an examinee's state of knowledge that cannot be extracted by conventional means could be obtained from his "degree-of-belief probabilities" about the correctness of all alternatives. In order to measure these degree-of-belief probabilities, Shuford, et al. argue that "...it is necessary to have a scoring system designed in a very special manner that guarantees that any student, at whatever level of knowledge or skill, can maximize his expected score if and only if he honestly reflects his degree-of-belief probabilities," (1966, p. 126). Such a scoring system and implied response method is called an admissible probability measurement procedure.

The procedures proposed by de Finetti (1965) and by Shuford, et al., (1966) have considerable appeal on logical grounds, however, "...at present, the sole recommendation of these new methods is their strong conceptual attractiveness, " (Lord and Novick, 1968, p. 314). There is great opportunity in WETEP for considerable empirical research employing these methods.

## BASIC RESEARCH PROGRAM

The following sections are organized by content as outlined above in the Objectives Section. Figure 1 presents a general overview organized according to the order in which the phases of research will be undertaken. The numerals in each box in Figure 1 will be used to relate the following discussion to the figure.

Each phase represents approximately one year's work. The steps within a phase may be undertaken simultaneously, but are dependent upon the completion of certain steps in the preceding phases. Arrows indicate the major dependencies.

The location of steps within a phase indicates the order in which the steps would be undertaken. For example, the left-most step is evaluation of existing sequential-test strategies under actual sequential-test conditions. This step has the highest priority because it will indicate the generality of the previous research using artificially scored existing item-response data.

During the first three phases (years) the research program will be concentrated in selected subelements, such as Learning Theory, of the Teaching-Learning Experiences Component of WETEP. In the second three-year period implementation of computer-assisted testing in all remaining subelements of this component will be undertaken.

### Design and Evaluation of Sequential Tests

### The Structure of Sequential Tests

Decision Models for Branching. In previous research, (Cleary, Linn & Rock, 1968a and b; Linn, Rock & Cleary, 1967 and 1969) a number of different branching strategies have been investigated (see Step 1 in Figure 1). In all, seven different programmed tests have been developed. Some of the programmed test procedures were judged to be superior to conventional tests of equivalent length. However, these results were based on existing item-response data which were scored as if the items had been presented sequentially. This is obviously not a substitute for research using tests that are administered in actual sequential format.

Therefore, one of the first steps of the proposed program of research would be to employ the most promising programmed test procedures in simulated, if not real, computer-assisted conditions. (The group-discrimination procedure could be tested under simulated conditions, since only one branching decision is involved.) This step corresponds to Step 1 in Figure 1.

WETEP students in the Learning Theory subelement of the Teaching-Learning component may serve as a population of subjects similar to those used in the preceding artificial-test research. A large pool of achievement items and the relevant item analysis data are available from the existing course in Educational Psychology.

Figure 2 presents a schematic representation of a branching tree for a sequential test. The figure is presented to clarify some of the terminology used below:

Node -- a set of items given as a block without intervening decisions.
Branch -- a path between two nodes.
Step -- the location of nodes along a vertical line in Figure 2. The step number indicates the number of nodes that have been administered to an examinee at a given time.
Level -- the location of nodes along a horizontal line in Figure 2. Level number indicates the difficulty of items in a node.

Assuming that the relative merits of the various programmed tests are maintained under actual programmed-testing conditions, several questions need to be explored regarding the effectiveness of different strategies (Step 6 in Figure 1)

One major strategy question is concerned with the optimum number of branches. In our previous research, there was some indication of a curvilinear relationship between effectiveness and number of branches. The item statistics that were used to select items were probably least appropriate for the methods involving the most branches. The limited size of the item pool also imposed more of a constraint on the methods using more branches, since fewer items met the more specific requirements of the individual nodes.

In the evaluation of previously used sequential test strategies, an attempt will be made to standardize the item-selection procedures in order to clarify the effect of the number of branches. An increase in the number of branches should not decrease the effectiveness of the procedure.

Figure 1

Phases of Proposed Research Program

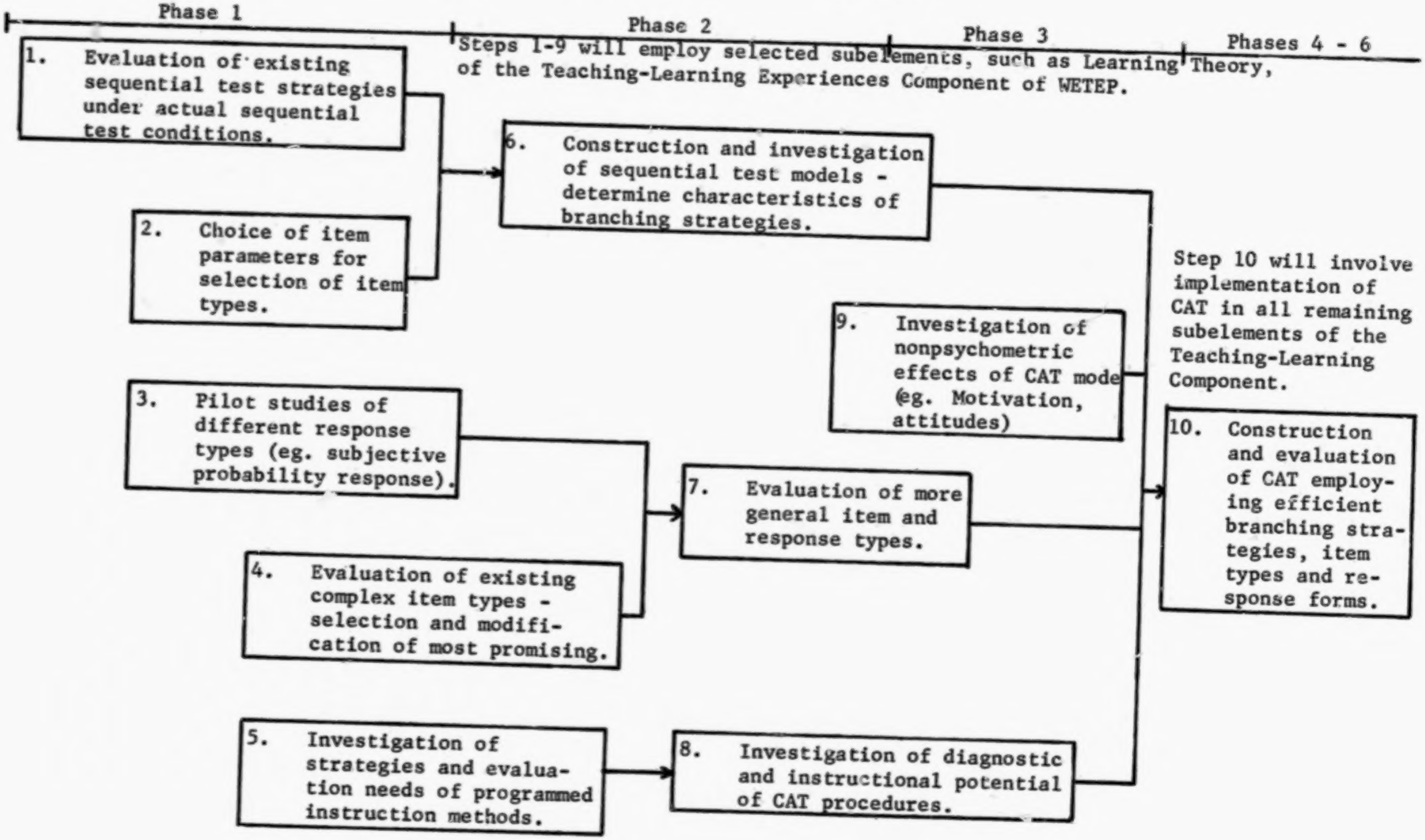
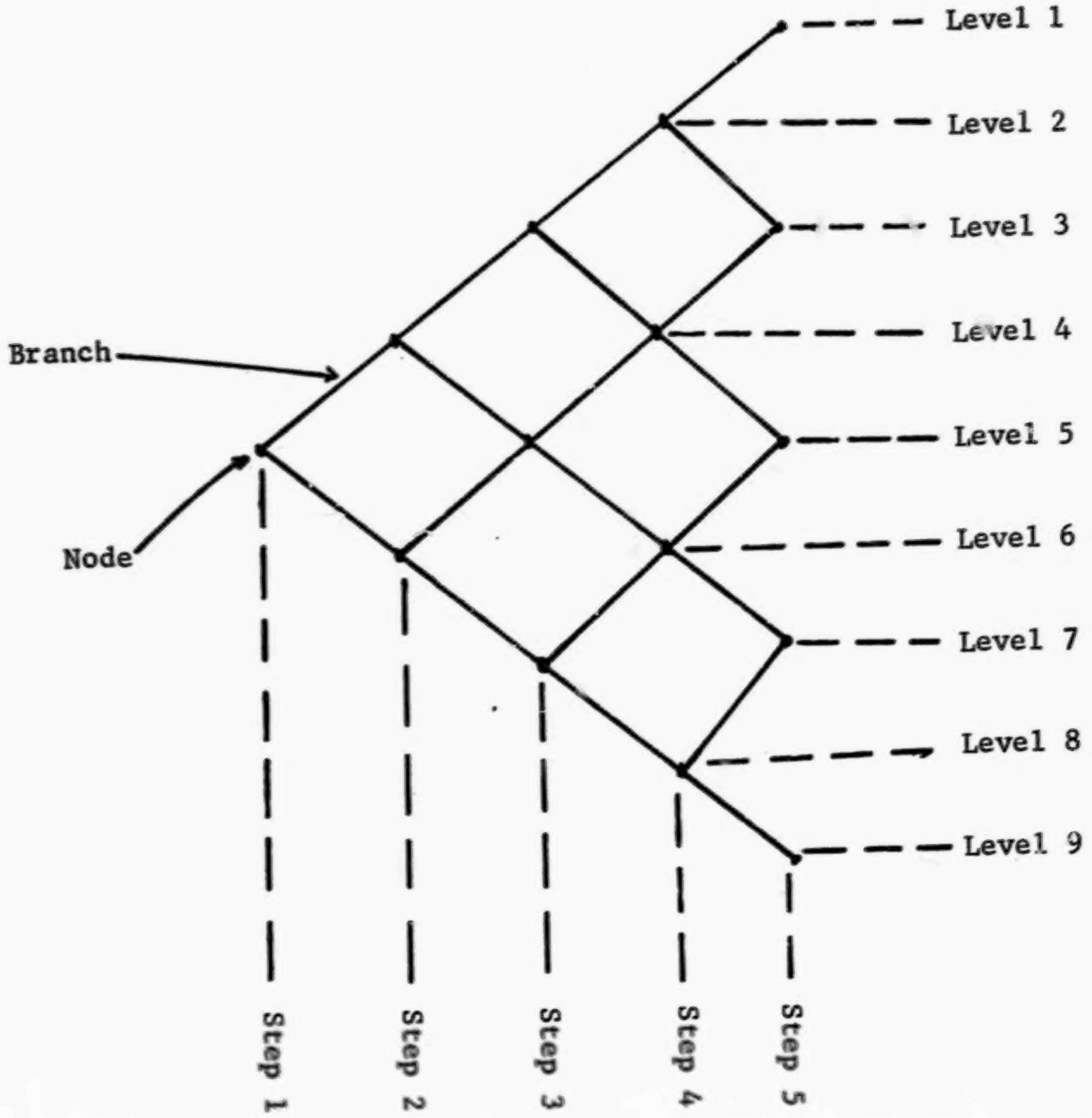

Phase 1
Phase 2
Phase 3
Phases 4 - 6
Steps 1-9 will employ selected subelements, such as Learning Theory, of the Teaching-Learning Experiences Component of WETEP.
1. Evaluation of existing sequential test strategies under actual sequential test conditions.
2. Choice of item parameters for selection of item types.
3. Pilot studies of different response types (eg. subjective probability response).
4. Evaluation of existing complex item types - selection and modification of most promising.
5. Investigation of strategies and evaluation needs of programmed instruction methods.
6. Construction and investigation of sequential test models - determine characteristics of branching strategies.
7. Evaluation of more general item and response types.
8. Investigation of diagnostic and instructional potential of CAT procedures.
9. Investigation of nonpsychometric effects of CAT mode (eg. Motivation, attitudes)
Step 10 will involve implementation of CAT in all remaining subelements of the Teaching-Learning Component.
10. Construction and evaluation of CAT employing efficient branching strategies, item types and response forms.

Figure 2

Branching Tree Design


Level 1
Level 2
Level 3
Level 4
Level 5
Level 6
Level 7
Level 8
Level 9
Branch
Node
Step 1
Step 2
Step 3
Step 4
Step 5

The procedures in which the nodes consist of a single item are based on the most general and flexible model. This general model permits the utilization of response pattern information. In the extreme case in which one has items with perfect discrimination (item characteristic curves that are step functions), the single-item node procedure is clearly best. Any given item divides the sample into two non-overlapping ability groups. Then any item which discriminates within the upper group will have no discrimination within the lower group, and vice versa.

Typical items, of course, do not approximate perfect discrimination and do, in fact, provide some discrimination over a wide range of the ability continuum. If available items do not have sufficiently high discrimination power, it may be desirable to use more than one item at each node. However, since the single-item node model is best for ideal items, we shall consider it our basic model which may have to be modified by practical considerations.

If the single-item node model is accepted, one must determine:

1. What should be the difference between levels, that is, what should be the changes in item difficulty from one node to another? Should the level differences remain constant or change from one step to another?
2. What criteria should be used for branching a student such that a given terminal level is permanently closed for him?
3. How should the test be scored?

A first step in answering these questions can be taken by simulating test data using a simple item characteristic model and assumptions about the distribution of ability. A possible approach would employ a linear item characteristic function and assume a binominal distribution of ability. While not based on commonly used assumptions, this model should provide a reasonable fit to the item-test regression and test scores distribution.

Using this model or another similar model the efficiency of various branching strategies could be compared. While working with the model, we would limit consideration to simulated items with the same parameters as items on the existing response-data tape used in previous research. Then the most promising methods can be tested immediately with the existing data tape. Thus, decisions can be made about the efficiency of various branching strategies which can be used for the final phase of the proposed program of research (Step 10 in Figure 1).

Research on programmed instruction should be carefully investigated with regard to strategies and evaluation needs (Step 5 in Figure 1). Cooperation with WETEP researchers in instruction strategies will facilitate the development of integrated systems of instruction and evaluation.

Test security presents some interesting problems in computer-assisted testing. Short tests and flexible testing schedules make possible communication among subjects. In addition, if immediate feedback regarding the final score is provided, students who are to take the test can obtain precise information about whom to believe. By replicating the answers (correct and incorrect) of the high-scoring student, they too are assured of a high score.

Clearly the items in the test cannot remain fixed: at least in the early steps, the items must be varied. Since this added variability in items can be expected to decrease measurement precision, it will be important to determine some of the important parameters of effective communication. It is possible that minor changes in some types of items (eg., changing in the digits in arithmetic problems) would forestall communication. Within complex trees with many nodes, it may be necessary to change only items in the early steps.

Item Selection and Scoring. In our previous work, items have been selected primarily on the basis of proportion passing and the point-biserial correlation with total-test score which have been computed for the total group and for some of the relevant subgroups (see Step 2 in Figure 1). These statistics have two major disadvantages for item selection: (1) They are highly dependent upon the group for which they are computed. Statistics computed on the total group are not readily applicable to subgroups formed in the process of sequential testing, and it is not generally feasible to calculate these statistics in all subgroups. (2) They do not provide the most relevant information for test construction. Some function of the proportion passing is required, since the simple proportion passing does not give an indication of the location at which the item has maximum discriminating power.

Estimates of the parameters of the item characteristic curves would provide more reasonable information for construction of sequential tests. The parameters are independent of the particular group and could be estimated using a large sample covering the full range of ability and then applied in any subgroup.

Given the parameters of the item characteristic curve, it is possible to determine the probability of a response choice at any criterion score level. It is also possible to choose an item which optimally divides examinees into two groups of any specified size.

Although there are theoretical advantages to using parameter estimates based on latent-trait models, these statistics are not generally available for existing item pools. The more sophisticated estimation procedures for these models also involve extensive computations and require very large sample sizes to achieve reasonable stability. Item statistics based on item-test regressions provide a reasonable approximation to the results based on latent-trait models. Item-test regression statistics will be used for item selection during some of the early stages of this research.

An extensive item-analysis package is available for the CDC 1604-3600 computers at the University of Wisconsin. The Test Analysis Package (Baker, 1966) consists of two programs, one which performs item analyses of mutliple-choice items (GITAP) and one which develops a set of optimum weights for items that are to be scaled (RAVE). Our primary interest, at least in the beginning, would be in GITAP.

GITAP provides the following statistics for each possible response to an item:

1. proportion of respondents choosing the alternative;
2. the point-biserial or biserial correlation with total test score or an external criterion;
3. $X_{50}$, the point on the criterion scale corresponding to the median of the response characteristic curve;
4. Beta, the reciprocal of the standard deviation of response characteristic curve.

The advantages of $X_{50}$ and beta have been more fully explicated by Baker (1964). The validity of the assumptions underlying the calculation of $X_{50}$ and beta with the total test score as the criterion has been questioned by Lord (1965a; b). Lord points out that the assumption of the normal ogive relationship between ability and probability of choosing a response is not applicable when total score is substituted for ability; Lord would prefer the assumption of a linear relation between total-test score and the probability of choosing a response, however, the ogive model often appears to fit the data probably because the low discrimination of items leads to an almost linear relationship in the observed score range.

GITAP estimates the parameters of the response characteristic curves as if the curves were independent. Clearly the curves are dependent and the sums are restricted: at all points along the criterion scale, the sum of the probabilities for all alternatives must be one.

The above objections to the procedures of GITAP certainly need to be kept in mind. Nevertheless, the program provides one of the most comprehensive, readily available item analysis packages and probably will be used in the initial stages of research.

While using the results of GITAP initially, a number of other models need to be evaluated with regard to their feasibility and general applicability. The models proposed by Birnbaum (1968), by Levine (1967), and by Rasch (1960) seem to be particularly promising examples. Birnbaum's three-parameter logistic model is particularly appropriate for multiple-choice items since it allows a non-zero probability of correct response at low ability levels. It may also be worthwhile to investigate the usefulness of analysis of individual distractors. Where more than one incorrect response is available to the examinee, information is possibly lost in combining incorrect responses. If an examinee answers incorrectly only because of an unlucky guess, different incorrect responses do not yield differential information. Nevertheless, good multiple-choice items often have distractors at different levels of difficulty; where the examinee chooses the "best" answer, the distractors may differ in quality. In item analyses where the parameters of the response characteristic curve are estimated, different location statistics are often observed for the various distractors.

As new item types are explored, consideration of the information available from all of the possible responses becomes more important. In the problem-solving items, for example, the distinction between right and wrong solutions becomes less meaningful.

Scoring of conventional multiple-choice tests typically involves only the number of correct responses. (On formula scoring number wrong and number of omits are also used.) There are several reasons for this. It has long been known that individual item weights are unstable. In addition, it has been shown that with any latent-trait model, the sum of the number of correct responses is a sufficient estimator for the latent trait, provided that all items have a common item characteristic curve. For the logistic test model, it has been shown that weighting the item responses by their discrimination indices results in a sufficient statistic, (Lord & Novick, 1968).

However, these results do not apply when examinees do not respond to the same set of items. In branching sequential tests, consideration must be given to the differing difficulties of the items to which different subjects respond. For example, it is possible, using the model suggested above for the simulation work to describe the distribution of ability for those examinees who are directed to any particular node. Some characteristic of this distribution, such as the mode or mean, might provide a useful scoring weight.

*Evaluation*. It is clear that many of the standard yardsticks of psychometric evaluation can, and probably should, be applied to the sequential tests. For example, one could rather easily gather data for studies of test-retest reliability. More difficult would be parallel-form reliability, since the sequential methods require larger item pools. Internal consistency formulas are not directly applicable to the sequential tests, since not all subjects take the same items. Considerations of internal consistency are relevant, but modification and extension of present procedures are required. Calculation of standard validity coefficients presents no problem.

While relevant, these standard yardsticks are not the most appropriate for the sequential tests. The correlation coefficients are based on the total sample, and the most sueful interpretations assume homoscedasticity. One of the major potential advantages of sequential tests is the production of heteroscedastic distributions: one might be able to produce samll standard errors of estimate at critical points. In addition, the assumption of linearity of regression might well be inappropriate, as one may want regression slopes to be steeper near critical points than elsewhere.

A potential advantage of sequential tests is the possibility of obtaining measurement at the extreme scores of a general purpose test. A general purpose test, such as many college admissions tests, requires measurement over a wide range of ability. An appropriate evaluation would be based on the comparison of the standard errors of estimate at various points along the scale. For example, if a conventional and a sequential test were given to a group of examinees and the sample was then stratified on a relevant criterion measure, one would expect the sequential test to have smaller standard errors in the extreme groups.

The validity of all of these comparisons depends on the conventional tests that are used as standards. It will be important to use conventional tests that are based on modern test-construction procedures. In order to decrease the possibility of "experimenter bias," outside experts will be used to evaluate and approve the conventional tests. In the case of commonly used standardized tests, the expert will be asked to evaluate the appropriateness of the instrument for the comparison. When comparison tests have to be constructed, the experts will be asked to approve the method of test construction and the final item selection.

All of the comparisons must involve considerations of the utility of the methods. One needs to consider the number of items and the testing time used by both methods as well as the cost of the errors of misclassification. The actual dollar costs of machine time are important, but impossible to evaluate at this time. At present, the costs are high, but if, in the future, schools are using computer terminals for programmed instruction, the actual cost would be shared and conceivably could be even less than costs of present test administration practices.

There are a number of important non-psychometric factors that need to be considered (Step 9 in Figure 1). Since a student is taking fewer inappropriate items, one would expect improvements in motivation and attitudes. To some extent, these improvements will be reflected in the psychometric evaluations: a reduction in guessing and random responding would improve reliability and validity. Measurement procedures in the areas of motivation and attitudes are too complex to be dealt with extensively in the proposed research. Incidental information may be obtained: attrition rates on repeated testing, student comments, and experimenter observations. In addition, short questionnaires with face validity might be administered.

The fact that the computer can control the length and character of the instructions could be an advantage. Students could be allowed to request further instructions, or the sample items could be used to insure that the instructions are understood. In some test situations, certain examinees perform below their maximum or may respond randomly because of lack of motivation. The capabilities of computer-assisted testing could be used to insert check items: items for which only one response was reasonable. Such check items would be inserted only after certain patterns of response (primarily incorrect response), and some action could then be taken: terminate testing, alert tester, or modify the test sequence.

## Item Types and Formats

Computer-based testing makes possible administration of more complex item types than are practical with paper and pencil (Step 4 in Figure 1). Of particular interest in the study of computer-assisted testing is that type of item which might be called "interactive," that is, an item in which there is an interchange between the examinee and the computer. For example, it is possible to design items in which the examinee actually uses the capabilities of the computer to solve the problem presented. At a more basic level, the computer could be used to provide information requested by the examinee, clues for the non- or incorrect respondent, and immediate feedback. The potential form and the effect of all of these interactive uses of computer-assisted testing must be evaluated.

Although problem-solving items in which an examinee can request certain bits of information or attempt various solutions with immediate feedback have considerable face validity, research would be required to evaluate the usefulness of such techniques. For example, little is known about the scoring of items of this type. Some such items could be scored dichotomously according to whether or not the problem was solved. However, more typically the methods of solution and the series of non-solution responses could be ranked according to quality. In some cases the solution might be considered of less importance than the series of responses. The validity of such simulated problem-solving tests for important criteria must be demonstrated.

Many modes of test presentation are possible with computer-assisted testing. The content of test items can be expanded by the use of computer-controlled audiovisual presentation: language items can be presented by audiotape; a scope or films could be used to present items that required animation or motion.

The development of new item types has been an integral part of research on creativity and curriculum evaluation. Existing techniques need to be evaluated in terms of applicability of computer-assisted testing (Step 4, Figure 1). The methods which are judged most promising would then be modified in computer-assisted testing (Step 7, Figure 1).

## Response Types

If students are tested at individual computer terminals, it would be relatively simple to collect some types of additional response information (Step 3, Figure 1). For example, response latencies could be obtained along with the response choice for each item, and these data could be analyzed with regard to their validities, relationships to test scores, and possible usefulness as item indices.

Greater advantages might be obtained by asking for a fundamentally different kind of response from the examinee. A number of response types are worthy of investigation: the most interesting are those which ask the subject to indicate his partial knowledge by one means or another. De Finetti (1965) has provided a useful discussion and categorization of these subjective probability methods.

Many questions need to be answered before these methods could be seriously considered as replacements for current procedures. Are examinees able to respond in the ways requested? How refined should the probability categories be? How long would a test have to be to insure that an examinee followed a strategy which would maximize his expected score, rather than following a more risky strategy which would have some small probability of yielding a much higher score? Do these measurement procedures yield better predictions of important outside criteria than do conventional methods requiring equal amounts of examinee time and expenses? Which of the large number of possible scoring procedures that satisfy the requirements of an admissible probability measurement procedure is best? How should item scores be combined to form a total score?

This aspect of the proposed program of research would be aimed at answering questions such as those listed above. Part of this can be accomplished by the administration of test batteries under various conditions and the collection of relevant criterion data from the Input Component for each student. The use of computer consoles would facilitate the administration of a test requiring degree-of-belief responses. However, much of the research could be accomplished using paper-and-pencil test procedures. In addition to standard validity information these studies would investigate the influence of risk-taking strategies on personal-probability testing. Kogan and Wallach (1967) have reviewed a number of studies showing that conventional testing procedures are subject to influences of risk-taking strategies, and it seems reasonable to expect that personal-probability testing might be much more subject to this type of influence.

Computer-based testing would also make possible other modifications in the method of response. For example, an examinee could be instructed to continue to select alternatives until the correct one was chosen, at which time a new item would be presented. Such a procedure would be another approach to gaining some information about the amount of an examinee's partial knowledge. Although such an approach does not have some of the desirable logical properties of the personal-probability response methods, it might be less subject to the influence of differences in test taking strategies. On the other hand, the effect of being informed that an answer was wrong might cause other problems. In any event, it seems desirable to begin to explore the potential usefulness of response methods of this type.

## IMPLEMENTATION OF THE WETEP EVALUATION SYSTEM

An obvious first step in the implementation of computer-assisted testing for WETEP will be the development of the assessment procedures required by individual curriculum modules. As the modules are developed, both the prerequisites and the educational goals will be clearly stated in behavioral terms; thus the assessment needs are potentially evident, and the first step toward implementation has been taken. In many modules all or part of the assessment can be done by means of computer-assisted testing.

As the WETEP system is developed and the modules are coordinated into subelements and elements, the assessment procedures will also be organized into larger units. Clearly it would be impractical to have a student take a large number of short tests, when at a single testing session his readiness for an entire block of interrelated instructional modules might be assessed.

Information from WETEP records will be continually used to keep the amount of testing required at a minimum. For some students interrogation of these records will indicate that at a given point within the system there is no need for testing.

An interesting possibility for assessment within WETEP is both the general evaluation and the more specific evaluation available at the request of the student or his faculty advisor. There is no reason why sequential tests could not be used at any time to give a student an indication of where he stands relative to his educational goals. The student could request reevaluation in a particular subject matter area or he could request more comprehensive evaluation over a large number of inter-related areas. The measurement strategies for the voluntary testing might be quite different from those which are an essential part of the instructional system. In the voluntary testing procedures, for example, test length might be decided by the student. It should be possible to develop a way of communicating to the student the confidence he can place in a given score and then allowing him to decide if he wishes greater precision.

As the University records are updated with each assessment, the records could be checked for inconsistencies among the student's stated goals, his abilities, and his performance. The information from the records could be used to increase the validity of the assessment: if an achievement score is not consistent with previous performance, more complete testing might be indicated. If a student's achievement is not consistent with his goals and/or abilities, the student and his faculty advisor might be alerted.

The WETEP system offers unlimited scope for new and unusual measurement strategies. While it is not clear that not all assessment is amenable to computer implementation, a large portion of what is now evaluated by paper-and-pencil tests can be more flexibly and efficiently evaluated by computer-assisted testing strategies.

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## WETEP AS AN ALL-UNIVERSITY FUNCTION

Dan W. Andersen

Teacher education is properly the responsibility of the total institution. Since 1930 the University of Wisconsin has maintained a pattern of organization for its School of Education that automatically involves all who help to prepare teachers in the making of policies for teacher education. This plan illustrates one way by which the all-institution approach to teacher education may be achieved.

The specific faculty legislation prescribes that:

> The faculty of the School of Education shall consist of members of the Department of Education and of certain other departments budgeted in Education, (i.e., Physical Education-Men, Physical Education-Women, Art and Art Education, and the Wisconsin High School), and in addition, on the analogy of the Graduate School, of those members of departments of other undergraduate colleges and schools who offer courses of junior or senior grade for teaching majors or other courses of content type required in the School of Education.*

In actual fact, even though many changes in organization have taken place since this statement was made, the faculty of the School of Education extended to include 1076 professors representing 61 departments in 1967-68. All of these individuals are full-fledged members of the faculty of the School of Education. They are eligible to attend faculty meetings, have all rights of franchise, serve on School of Education Committees, and are responsible both directly and through their departments to the faculty and dean of the School of Education for matters pertaining to teacher education.

Under the Wisconsin-type plan of organization, the School of Education functions as the over-all administrative organization, a type of holding company, to marshall the total resources of the university to educate teachers and to provide research and services to schools. This approach to teacher education rests upon the following premises:

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*Laws and Regulations Governing the University of Wisconsin, September, 1951, Part V, pp. 2-3.

1. The entire university is responsible for the quality of the teacher education maintained; therefore, wide participation in policy-making is encouraged and provided.

2. All departments affected by policies for teacher education are expected to participate in their formulation.

3. Departments are looked to for leadership in the development of policy related to the unique contribution of each to the institution's program of teacher education.

4. Differences in viewpoint are studied thoroughly to find a common ground for policy.

5. Care is exercised to avoid excluding anyone in the university interested in teacher education from helping to shape policies. Effort is also made to stimulate as nearly complete participation as is possible.

6. The objective of policies is to develop a program of teacher education characterized by balanced strength in liberal education, specialization in subject fields, and skill in teaching.

7. A continuous program of evaluation is essential to test the merit of the policies adopted.[1]

Teacher education at the University of Wisconsin properly consists of a broad liberal education; foundation work in the historical, sociological, philosophical and psychological backgrounds of American education; and professional orientation and methodology in teaching. In developing programs for liberal education purposes, the School of Education looks to those departments and professors whose primary attention is given to the basic courses in liberal arts and sciences provided for all University students. Subject-matter departments assume responsibility for proposing major and minor programs of specialization. Similarly, the pedagogical departments (Curriculum and Instruction, Educational Psychology, Educational Policy Studies, etc.) give leadership to the professional sequence provided for teachers.

The School of Education maintains two standing program committees--one for secondary education, and one for elementary education--which are composed of faculty members representing various departments and schools of the University. These committees have responsibility for studying the over-all program of teacher education in the areas they represent, for evaluating the effectiveness of the work, and for making recommendations concerning policy and programs to the faculty of the School of

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[1] Stiles, Lindley J. "The University of Wisconsin Plan for Teacher Education." School and Society, April 21, 1962, Vol. 90: 189-191.

Education. Recommendations concerning policy and programs for teacher education are referred to the various departments for thorough study and discussion before they are presented to the general faculty of the School of Education.

Specifically for WETEP, this all-institution approach to teacher education makes available the total University resources and facilities for a full-scale attack on the problems of preparing elementary school teachers. In the University of Wisconsin, the program of Integrated Liberal Studies, the all-University program in Child Development, the University clinics and child-care agencies, and the strong College of Letters and Sciences are illustrations of resources which tend to be unique to a university and are seldom found outside such an institution. Distinctive programs of teacher education depend upon excellent instruction in both the specific programs of teacher education and in the related and supporting programs of the university.

The WETEP program will prepare elementary school teachers for children from age 3 through grade 6. For the first two years, the student will be enrolled in the College of Letters and Science. Major emphasis during the freshman and sophomore years will be placed upon the basic bachelor degree requirement. Late in the sophomore year, a student may apply for admission to the introductory component of WETEP.

The major purpose of the Integrated Liberal Studies sequence or the general B. S. requirements as the basis for planning the first two-year program of the student in WETEP as in the current program, is to provide each student with a balanced and adequately developed program of general education. The continued exposure to courses outside of professional education during the four-year sequence is fostered through areas of specialization designed to complement programs within the professional education sequence. These areas of specialization are selected from a broad range of course offerings in Letters and Science. The consequence of such a program will provide the WETEP graduate with the requisite general education and general teacher behaviors and skills, as well as more specific competencies in meeting the expectations of a specialized teaching assignment serving the needs of the specific children he teaches.

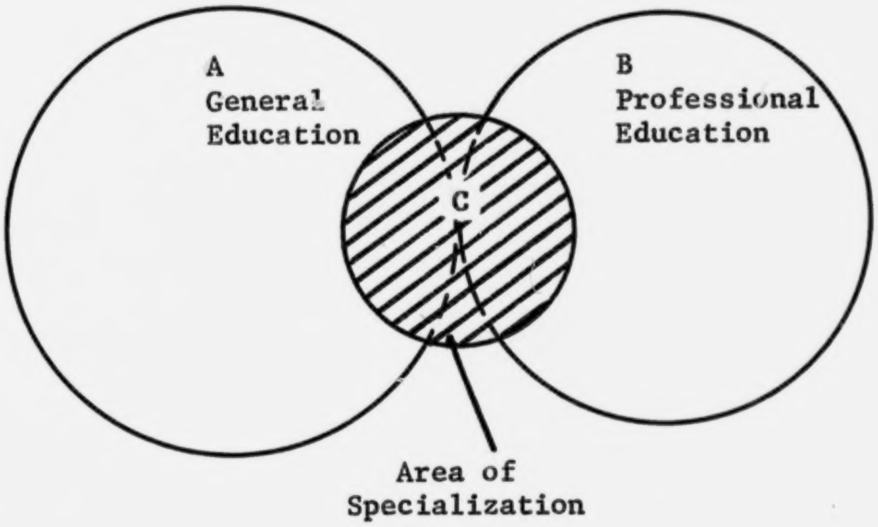
The last two years of the WETEP student's work in preparing to teach will have as their major emphasis, the work in professional education designed specifically to prepare him to become a superior teacher. The purpose of this phase of the program will be to intensify the student's examination of the major tasks of the teacher and to accelerate his development of those skills, abilities and attitudes which would insure his own successful performance in meeting these tasks in his own teaching. This portion of his training, naturally, will not be divorced from his continuing program of general education, but will focus in many respects specifically on what is involved in teaching young children.

The areas of specialization in general education need special mention here because of their unique role in the preparation program for the WETEP teacher. Within the WETEP professional program there will be opportunity for a wide variety of specialization choices. In addition to completing the minimum requirements for all WETEP students, each student identifies an area of specialization in which he will prepare himself. Illustrative specializations include the teaching of science, communications, or social studies; the teaching of children with special learning problems, or those with culturally diverse environmental backgrounds; or learning, assessment, or dramatic activities. These specializations will not be identified with particular instructional modules within WETEP which must be completed. Rather, the student, in cooperation with his advisor, will identify a major area of specialization and then will design a program to include both instructional modules within professional education and specific courses either in the School of Education or in the College of Letters and Science. The diagram in Figure 1 represents the relation of this specialization area to both the professional education and the general education instructional choices.

The area of specialization for each student will be developed out of instructional modules specifically prepared as a part of WETEP in combination with choices made from the wide range of course offerings from throughout the campus at the University of Wisconsin. The results are: (1) an opportunity for each student to determine his own major interest which gives direction to both the choice and design of the area of specialization, and (2) a set of teachers prepared for work in the schools who are individuals in the sense that each has a unique contribution to make to the education program of that school, and yet each has a strong academic background in general education, an appropriate understanding and competence in the area of professional education, an area of specialized competence, and a base for continued educational activity throughout one's professional career.

Figure 1

Relation of Specialization to General Education and to Professional Education


A
General
Education
B
Professional
Education
C
Area of
Specialization

A student whose specialization is work with the culturally diverse with special attention to Indian children might find himself making choices in each of the three categories such as those illustrated in Figure 1.

A. General Education

Introductory Sociology
Spanish
Freshman English
. . . .

B. Professional Education

Child Growth and Development
The Teaching of Communications
Creative Dramatics
. . . .

C. Area of Specialization

Ecological Experience (Living for one week with an Indian family)
Living Races of Mankind
Poverty and Social Welfare
. . . .

# THE ROLE OF THE SCHOOL

Carl Personke

## INTRODUCTION

Past and present teacher education programs have tended to centralize the bulk of pre-service education, both pre-professional and professional, on the campus of the university or college engaged in teacher preparation. Too often, the ties that bind the institution and the schools are weak at best. Teacher education, then, becomes the exclusive province of the teacher-training institution for three and a half years, during the Teaching-Learning component phase, and the province of the schools during the one-half year of the Output component phase. The WETEP systems approach makes it possible to reconsider this organization for a number of reasons, some of which follow.

On the one hand, the Output component may not always, or perhaps even usually, come at the end of the student's university undergraduate career. The student may concurrently proceed through the T-L and Output components with activities associated with the schools and return to campus for more experiences properly considered a part of the T-L component.

Secondly, the Feedback loop, or loops, a major aspect of the system, often dysfunction during the alternation from campus to school locations. The WETEP system's feedback from school to campus, from campus to school, from school to student, and from campus to student is designed to strengthen the cooperation between campus and schools in both planning and implementation of the teacher education program.

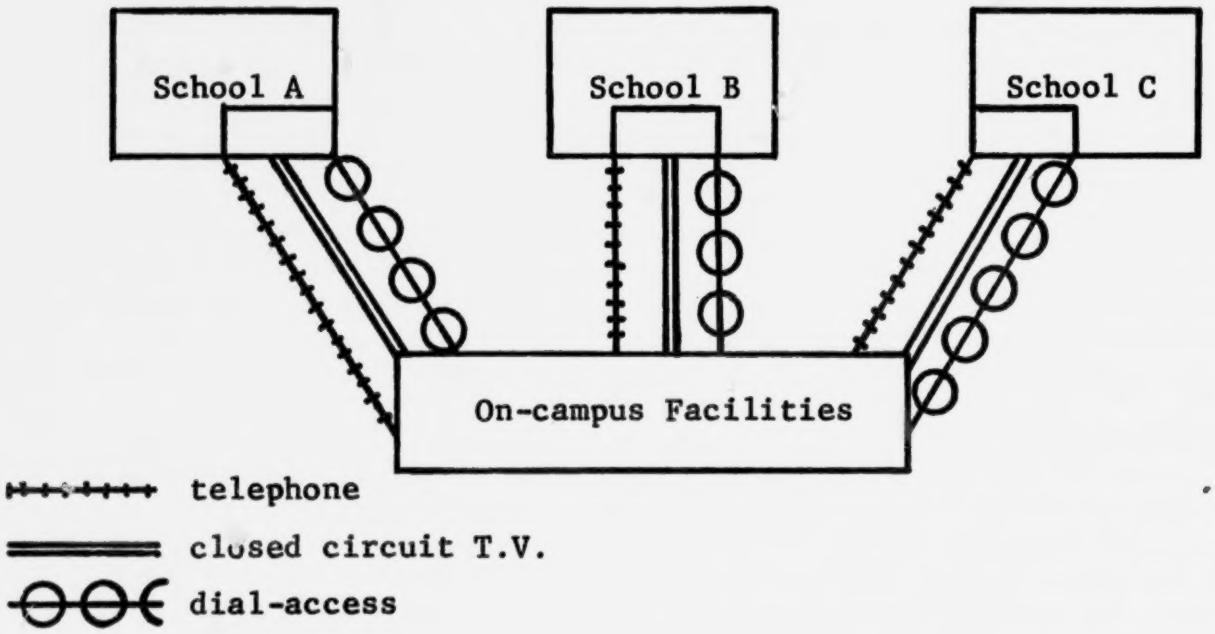
Finally, the quality of instruction may suffer from uncoordinated classroom instruction, laboratory experiences and clinical experiences. Lack of appropriate and continuous feedback at the time of assessment, diagnosis, and prescription may be a factor in this lack of coordination. The WETEP system provides for coordinated functioning among the several aspects of the instructional program. In the final analysis, in WETEP all three interested parties benefit from this improved coordination. The school receives relevant assistance with its instructional problems through participation in the teacher education program. The institution receives the necessary information for continual improvement of on-campus aspects of the program. The student participates in the program best suited and directed to help him become an effective teacher.

WETEP is designed to initiate a program devoted to both the pre-service and in-service education of the teacher. That is, the internship is recognized as only the beginning phase of the Output component, which encompasses the entire professional career of the teacher. When viewed in this way, the teacher education institution can finally give more than lip-service to the concept of continuous professional growth by teachers and can, in fact, provide effective leadership in this area. The end of the pre-service educational program is marked only by receipt of a degree and a certificate; the instructional connection between the WETEP student and the institution will continue as before certification.

WETEP is designed to improve the communication link with the school network. This is done to provide a clinical experience which will properly take its place in the structure of the system, with the necessary direction and feedback to provide a systematic and consistent program of experiences for each student. In-service education might also be facilitated by the improvement of these communication links. The determination of the specific manner in which these links may be best facilitated is a part of the feasibility study of WETEP.

## OPERATION OF THE SYSTEM

The diagram in Figure 1 offers a generalized description of the physical aspects of the WETEP network system. This system would alter the usual student-professor relationship by bringing the professor to the student as well as the student to the professor. It would also bring the professor to the school and the school to the professor, presumably to the mutual benefit of both parties. Since all communication systems are two-way, the system makes it possible for professor and teacher/intern to maintain one-to-one direct confrontation even over a distance of many miles. Furthermore, the teacher/intern has available to him all of the resources of the teacher education institution, including media, dial-access, computers, libraries, and programs. Even such highly individualized techniques as micro-teaching may be conducted via the closed-circuit television network. Classes, both



School network for WETEP

Figure 1

large and small, conferences, and independent study can be conducted, and research and curriculum innovation can be facilitated, through the network system. Schools within the network would also have an intercommunication potential through the same channels without a need for separate and distinct facilities for this purpose.

Since WETEP is innovative and experimental, full-scale operation according to a single model would seem imprudent. Instead, a number of variations on the theme will be utilized, including continued operation of a system of internship utilizing supervisors and on-campus instruction, except for the intern semester.

Degree of permanency within specific schools or school systems is a problem with many facets. On the one hand, full partnership with cooperating districts might be difficult to attain in many systems for one reason or another. On the other hand, the vitality of the teacher education program might be threatened with an arteriosclerotic condition if tied to only a few specific schools or systems over the years. Sites selected to offer a fair representation of different types of schools and situations might change as population shifts occure, and a network originally scheduled according to precise formulations might eventually cease to resemble its original scheme. Instead of one network model, then, three models are suggested; events may prove that one of these is superior to the others, or that various schemes, operating side by side, offer a necessary degree of flexibility.

Plan I: Ten school districts will provide one or two schools per district to serve in a network of permanent full participating schools associated with WETEP for purposes of cooperative responsibility in teacher education and in elementary school curriculum development. These ten schools, whose letters of support follow this position paper, have Board of Education approval of the relationship outlined below.[1]

## Requirements for Membership as a Full Participating School in the Wisconsin Elementary Teacher Education Project (WETEP)

A school desiring to become one of ten full participating members of the Wisconsin Elementary Teacher Education Project (WETEP) must have the capability of fulfilling an expected role as established in the project proposal. Although there will be a variety of ways in which schools may participate in WETEP, this paper has been prepared to outline the basic requirements for permanent full participating membership.

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[1] At the time of this writing, these schools are in the process of establishing the Midwest Instructional Systems Consortium of school for the purpose of facilitating cooperative participation in WETEP.

It should be useful in determining whether a school system has an existing school or one to be constructed which meets the necessary standards identified under four headings - building facility, program, staff, and WETEP involvement. The discussion of these standards is followed by a listing of additional characteristics which it is hoped one or more of the ten schools will fulfill.

## Building Facility

A building designed to accommodate the innovative elementary school of 1975 and beyond in which instruction may become increasingly individualized through the utilization of advancing technology will have several characteristics. Necessary physical components include areas capable of serving groups of varying sizes by using the open area concept of instructional space; ample space to serve the needs of a program relying heavily upon media which provides for flexible groupings of students; planning areas for the staff including a media reception facility, conference space, and work room for materials development; and environmental control as needed for a longer school year if desired and for maintenance of computer and other technological equipment. School equipment such as audio and visual tape recorders, projectors, teletype with CRT terminals, and computers will be essential to the instructional program which will place emphasis on their maximum utilization and accessibility. In some cases this may require the allocation and planning for specific space facility to permit adequate media emphasis.

## Program

Continual curriculum evaluation and development are essential for schools that strive to improve the manner in which they meet the needs of youth. As research suggests new directions, WETEP schools will participate in the exploration of adapting these suggestions to local school settings. One of the goals of WETEP is to provide a cooperative information feedback network between the university and participating schools. It is expected that member schools will accept the commitment of curriculum evaluation and development in cooperation with the university, . and the other cooperating schools.

Another aspect of program development in WETEP will be its focus on the uniqueness of the individual. While curriculum development has recognized individual differences for several decades, it has been only recently that educators have envisioned programs that effectively and extensively provide for the many facets of these differences. As we learn more about the process of learning and ways in which individualization can be achieved, it becomes a goal of WETEP and cooperating schools to build programs which provide for individualization through establishment of a variety of individualized learning goals, individualized learning sequences, and instructional modes which are available to learners by choice and by recommendation based on information about the individual.

## Faculty and Staff

Expanding programs which better serve the individual student will require staff participation in program planning, development, implementation and evaluation.

The staff of the school of 1975 and beyond will reflect the best of suggested solutions to the many problems that have hindered program development in the late 1950's and the 1960's. An emphasis on flexible staff organization will be evident. As the demands of a program require different staffing patterns, the school must be able to adjust easily and readily to these demands. Differentiation of staff roles will be imperative. The need for leadership (beyond that afforded by the principal) will require in most cases an instructional leader for divisions within the school. In addition, the instructional tasks will require teachers with specialized competence in various aspects of education for young children. The effective utilization of the competent specialist in a particular curriculum area in the elementary school requires flexible staff organization. The integration of instructional specialists, a variety of instructional resources, and the management aspects of the program will be facilitated through the use of unit leaders, teacher-specialists, para-professionals, interns and clerical aides.

The effective assimilation of interns into the staff will require new patterns of involvement between the local school and the university. It will require released time for staff to plan with the project directors at the university and in the local school setting.

The participating schools will be concerned with staff development to fulfill roles in pre-service education, in-service education and curriculum development as part of one continuum. The school will seek to utilize the resources of the University of Wisconsin and the other participating public schools in developing its in-service program on a cooperative problem solving basis.

The need for released time for the staff is essential if the staff is to achieve the role assigned to it. There must be time to discuss, to evaluate, to plan, to develop and to implement ideas and acitvities. New expectations for teacher behavior will result in their reflective participation as scholars of education, of the learning process and of problems associated with growing children.

## WETEP Involvement

Involvement in the Wisconsin Elementary Teacher Education Project will require that each participating school experience at a new level significant relationships with the university and the other participating public schools. Contacts will be maintained to serve a variety of purposes. With both the university and the other schools, a sharing of resources will take place. These resources may include personnel utilization, program development, and the development and utilization of technological resources. Another sharing between the schools will be in the area of resources for in-service education. A new kind of involvement will lie in the development of the teacher education program. The role of the school for teacher education will not be only that of serving as a facility for student teaching. Rather its role will extend to involvement and concern for the direction of a wide range of educational experiences of the teacher from the time of admission to the professional pre-service sequence to the time of retirement.

## Optional Requirements for Full Participation in WETEP

A teacher education program designed to prepare teachers for 1975 will need to include laboratory and clinical experiences in the area of the culturally disadvantaged, early childhood education and special education. While all participating schools will be unable to become involved in each of these areas, it is essential that each area be represented to some extent among the ten full participation schools.

## Summary

In summary, the ten full participation WETEP schools must make a total commitment to supply the educational environment, to develop cooperatively a program implementing individualized instruction, to develop cooperatively an in-service program, and to cooperate as an integral part of the educational program for WETEP interns. Not only does the district make this commitment, it also receives many benefits as indicated below:

| | Cost to the District | | Benefits to the District |
|---|---|---|---|
| a. | Building - new or remodeling | a. | Curriculum development |
| b. | Released faculty time | b. | Instructional management system |
| c. | Interns' salaries | c. | Improved program |
| d. | Operation and maintenance of technological equipment | d. | Faculty in-service |
| e. | Purchase of materials | e. | Technological equipment |
| f. | Consultant cost - other than University of Wisconsin | f. | District demonstration center |
| | | g. | Faculty training center |
| | | h. | Continuous and systematic education |

Plan II: The Plan II schools are involved in providing placements for interns and are equipped with the technological support of the WETEP telecommunications system. This system will provide instructional resources for both interns and in-service teachers. The school district will provide space for a Professional Education Room either within the building itself, or in some less permanent settings, in suitable portable classroom space. Unlike schools in Plan I, Plan II schools will not be involved in curriculum development as a part of their cooperation in WETEP.

Plan III: Plan III schools will be served by mobile classroom vans and will supply the highest degree of mobility for the program. Vans will be equipped as part of the WETEP telecommunications system. Vans might be situated at a school for a week, a month, or a year, depending upon need. This type of operation might be used in conjunction with the present supervisor-visitation type of program, with the van going with the supervisor. It might also be used during junior year observations, thus allowing a wide variety of experiences in different types of situations.

In the initial stages of the program, one mobile van will be equipped for use in the junior year observation program and operate in a close radius to campus. One mobile van will be equipped for use in the internship program and will move about with a supervisor.

## EQUIPMENT

Television: Each Professional Education classroom will be equipped with two large monitors for viewing videotapes transmitted from the campus, or played on a recorder in the school, or live telecasts from a room in the school. A portable television camera will be in each school for use in videotaping and micro-teaching experiences. The same camera will be used for communication with instructors on campus. In addition, one fixed side angle lens camera or phonovision will be provided in the Professional Education classroom. In this manner, the instructor will be able to view his student(s) as he communicates with them.

On-campus instructors will be equipped with television cameras or phonovision for transmission to the schools. The instructor will also be equipped with all necessary media for instruction and transmission to the schools.

Dial-access: Both video and audio dial-access capability will be installed in carrels at each cooperating school. The student will use the telephone system to dial the central location for the desired program on the audiovideo transmission unit.

Telephone: Direct telephone connections will be installed from each Professional Education classroom through a switchboard to the offices of each element. Thus, a student may dial for a conference at any time. If video communication is desired, a time can be arranged for such a conference when appropriate facilities are available.

## ALTERNATIVE PLANS

The major internship is expected to be of approximately a semester in length. An alternative is projected for feasibility study which would involve the entire final year of the teacher education program. Interns would be assigned to some schools for one year each, every half year. Thus, only one half of the interns in a school would be new to the school. Second semester interns could then help new interns in adjusting to their roles. In this way, schools could be relieved of the burden of beginning anew each year with a new group of interns.

Interns will be under contract to, and be paid by, the school district at a rate commensurate with their duties. Since first semester interns will perform tasks at a lower level of professional competence, requiring less time, they would accordingly receive less remuneration. The second semester intern might receive pay approaching that of a beginning teacher since he will be functioning more nearly as a member of the professional staff, albeit in an initial and less responsible position.

Semester 1: During this time the teacher-learner will be involved in the classroom as an instructional aide. Definitions of the role of teacher aides vary considerably. It should be also expected that the role would differ to some degree relative to the needs of the individual school involved and of the individual student. Tasks would include preparation of teaching materials, keeping pupil records, taking children to recess or lunch, housekeeping tasks, helping individual students, teaching small groups, and so forth. Many of these activities would include laboratory experiences related to WETEP instructional modules.

Individual study will be facilitated during the internship year by the dial-access system. During the first semester of this year, a program of micro-teaching will begin. The supervisor, who will have the major responsibility for guiding the internship experience for each student, and the appropriate specialist who may be involved, can view the videotape, and discuss it with the student on the closed-circuit system. The cooperating teacher would be an active participant in this activity.

Since students will have completed the WETEP Input component on campus prior to school assignment, the courses to be taught during the intern year include elements in the Teaching-Learning component: methods in the various areas, educational psychology, and perhaps some of the creative arts. Except for an occasional on-site visit by instructors, these instructional modules would be offered in their entirety via the electronics network. Presumably the supervisor would be the only regular visitant to the school. It is also suggested that a cooperating teacher, one to a school, may have a dual appointment through the school district and the university with a major responsibility for guiding the internship experiences.

Semester 2: This will be the actual internship period. The teacher-intern will function as a member of a teacher team in planning and executing instructional activities, in curriculum development, in student assessment and diagnosis; in short, he will perform teacher tasks.

At this stage, instruction from the university will take the form of highly individualized assistance with current tasks and problems. The role of the cooperating teacher and the clinical professor become crucial in planning the sets of experiences to satisfy the individual needs of the intern. In these roles they will call other WETEP specialists for aid, perhaps through videotaping, micro-teaching, conferences, etc., when such aid is needed. They will also assist the teacher-intern in selecting programs for individual study from the many available through the WETEP system. Since this is the year when the teacher-intern will be most actively involved in curriculum planning, the areas of specialization will receive renewed emphasis, perhaps through cooperative work with an appropriate university specialist. Curriculum change and improvement will also be facilitated in this way.

The cooperating teacher and the supervisor, with the aid of other such specialists that may be involved with an individual student, will continuously assess the student's progress as they plan future experiences. Upon completion of the program, these same people will assess the intern's competencies. They might call on others involved in the program for assistance. On their recommendation certification is approved.

## THE IN-SERVICE PROGRAM IN ASSOCIATED SCHOOLS

At any time during his professional career, the in-service teacher will have the opportunity to request assessment of his competencies as a teacher. On the basis of this assessment he may embark on a program of upgrading, using the total facilities of WETEP through the telecommunication network.

Individual study and self-improvement can be carried out by independent study, using the library, dial-access for stored programs, self-assessment through videotaping and interaction analysis, micro-teaching with the aid of university personnel, and observation of other teachers by video.

A group of teachers may determine to work together toward greater competency in a given area. The program now might involve group study, with the full facilities of WETEP including the full range of WETEP instructional modules.

Another type of in-service growth program might involve the teacher in research or curriculum development projects. These can be directed by, or carried out with consultant help from university personnel.

The clinical professor, in partnership with the school principal, helps to direct the teacher into the type of program best suited to his needs. He helps to plan and facilitate his work as he serves as liaison with the university. His role, then, no longer begins and ends with the intern, but is directed in concert with many individuals to the professional growth of all teachers in the school.

## CONCLUSIONS

The roles of schools as suggested for WETEP involves two major changes in the philosophy of teacher education.

1. The preparation of teachers ceases to be a function of only the teacher education institution. The public school system, vitally concerned with the product of WETEP, becomes an active partner in the pre-service preparation of the teachers.

2. The role of the schools is extended to include cooperative efforts in both pre-service and in-service education. These cease to exist as separate and distinct entities. The WETEP internship is the initial teaching experience, with the teacher education institution serving as partner with the school in guiding the initiate. Succeeding years simply see the partnership continue in assisting each teacher in the process of achieving the most effective and productive use of his talents.

## TWENTY-FIVE QUESTIONS ABOUT WETEP

1. Is it possible to design specifications today for a teacher education program appropriate and adequate by 1975? Answer: This is, indeed, a difficult task and has been undertaken with the full recognition that specifications included in the present report are subject to continual updating and revision as WETEP development progresses. The present specifications provide a beginning point and a general direction for the program which will undergo constant monitoring in terms of the implications derived from a continuing study of society, of school practices and experimental development programs throughout the country, and of the success of portions of WETEP as they are implemented. (See: Yee, "A Cybernetic System for WETEP," Vol. I, 62-63.)

2. Can our society justify the time, talent, and expense which is required in the development of WETEP? Answer: The importance of the teacher role in our society makes it essential that we plan and implement the most effective educational program for teachers which can be envisioned. The implications of WETEP for public schools and as an exemplar for higher education programs of the future make the effort an essential one. Cost effectiveness studies need to parallel WETEP development so that benefit and cost comparisons are available for each developing aspect of WETEP. (See: Staff, "Schooling for 1975," Vol. I, 19-24; and Yee, "A Cybernetic System for WETEP," Vol. I, 47-53.)

3. Does WETEP prepare teachers for new curriculum design concepts in the schools? Answer: Yes, in a variety of ways. Each set of element specifications focuses on such new curriculum concepts as inquiry in the Social Studies, linguistics in Communications, and process in Science Education. Communication is viewed as a central focus in all elementary school curriculum. Even though the element specifications reflect current innovations, the WETEP staff and project represent a flexible organization which can utilize continually developing new ideas and programs. (See: Ammons, "Communication: A Curriculum Focus," Vol. I, 25-41; Tabachnick and Ferris, "Social Studies Education," Vol. II, 229-236; Vilscek, Barrett, Goldberg, Kean, Lowe and Personke, "Communications," Vol. II, 79-160; and Gale and Andersen, "Science Education," Vol. II, 195-228.)

4. How does WETEP deal with students' individual differences? Answer: Individual students, with the guidance of WETEP faculty members, plan their own sequences and goals within the WETEP structure and also choose from among alternate possibilities the instructional mode they wish to use in the study of any given topic. (See: Kean and Ubbelohde, "New Roles for University Faculty," Vol. I, 87-93; Sullivan, Ames, Iverson, and Ghattas, "The WETEP Media and Telecommunication System," Vol. I, 95-101; Andersen and Cavanaugh, "Input Component: Orientation and Screening," Vol. II, 5-34; and Grinder, Clifford, Elson and Shores, "Educational Psychology," Vol. II, 40-47.)

5. How does WETEP avoid impersonality? Answer: There is much student-faculty interaction in planning each students' program as well as in carrying it out. This is evident in the heavy reliance on seminars and individual student-faculty conferences as indicated throughout the 19 element reports. (See: Volumes II and III.)

6. Does WETEP aim to prepare a single kind of elementary teacher or are a variety of diverse teacher preparation patterns possible? Answer: A great variety of teacher preparation patterns are possible within WETEP due to the choices which can be made in the development of areas of specialization. (See: Andersen and Cavanaugh, "Input Component: Orientation and Screening," Vol. II, 5-34; Personke, Czajkowski, Howey, and Lange, "Curriculum and Instruction," Vol. III, 5-29.)

7. Is it possible for WETEP teachers to prepare themselves for work with certain types of school populations? Answer: Yes. Integrated with the many WETEP elements are special elements designed to prepare teachers for work with young children ages 3-6, with Indian children and with those in the ghetto, and with special learning disabilities. (See: Dawe, Davis, and Elson, "Early Childhood Education," Vol. III, 135-148; Antes, Belisle, and Crumpton, "Culturally Diverse," Vol. III, 149-166; and Billingsley and Schmidt, "Special Education," Vol. III, 167-215.)

8. Can WETEP further humanize higher education? Answer: The whole concept of WETEP is based on the premise that higher education today too often treats students in a very impersonalized way. WETEP is designed to improve the quantity and quality of personal student-faculty contacts through individual conferences and small seminars. (See: Kean and Ubbelohde, "New Roles for University Faculty," Vol. I, 87-93; Tabachnick and DeVault, "Teacher Roles for 1975," Vol. I, 43-46; Weaver, et al., "Mathematics Education," Vol. II, 183-191; Barrett, et al., "Space Facilities," Vol. IV, 11-12.)

9. Does WETEP represent an interdisciplinary approach to teacher education? Answer: Yes. The University of Wisconsin has a long history of an extensive interdisciplinary approach to teacher education. WETEP continues this tradition but is designed to make interdisciplinary studies more an integral part of the teacher education program. (For a general treatment of the topic, see: Andersen, "WETEP as an All-University Function," Vol. I, 135-139; for more specific examples of designs which integrate other disciplines with professional teacher education, see: Tabachnick and Ferris, "Social Studies Education," Vol. II, 229-236; Weaver, et al., "Mathematics Education," Vol. II, 161-194; and Antes, Belisle, and Crumpton, "Culturally Diverse," Vol. III, 149-166.)

10. What criteria will be used for screening candidates for admission to WETEP? Answer: It is anticipated that a variety of criteria will be found to be useful in the screening of teacher education candidates for WETEP. Less reliance than has been typical will be placed on the grade point average. (See: Andersen and Cavanaugh, "Input Component: Orientation and Screening," Vol. II, 5-34.)

11. How are the various elements of WETEP meaningfully interrelated? Answer: The systems approach does much to make these interrelationships possible. In fact, a major contribution of the systems approach at this point of development has been to identify the nature, extent and point of duplication frequently found within teacher education programs. Once identified the staff has proceeded to develop program specifications without these duplications. (See: Yee, "A Cybernetic System for WETEP," Vol. I, 47-75; for examples of interrelatedness see Grinder, Clifford, Elson, and Shores, "Educational Psychology," Vol. II, 35-77; and Billingsley and Schmidt, "Special Education," Vol. III, 169-173.)

12. How heavily does the WETEP design rely on aspects of Curriculum and Instruction? Answer: A major focus of the WETEP program is centered around the curriculum and instruction element which includes the laboratory/clinical aspects of WETEP. (See: Personke, Czajkowsky, Howey, and Lange, "Curriculum and Instruction," Vol. III, 5-29.)

13. Is WETEP designed to include all of the professional teacher education elements? Answer: Yes. In addition to the basic teacher education areas of Educational Psychology, Communications, Mathematics, Science, Social Studies, and Curriculum and Instruction, others are also included. The arts and physical education are also included. Elements not commonly found in teacher education programs include Leisure Education, Guidance Education, and Media and Technology Education. (See: Neperude, "Art Education," Vol. III, 31-38; Southworth and Knipping, "Health Education," Vol. III, 39-64; Damron, "Safety Education," Vol. III, 65-80; Hutchins and Knipping, "Leisure Education," Vol. III, 81-86; Perrone and Hosford, "Guidance Education," Vol. III, 87-92; Mullan, "Physical Education," Vol. III, 93-102; Sullivan and Iverson, "Media and Technology Education," Vol. III, 103-126; and Folstrom and Chambers, "Music Education," Vol. III, 127-134.)

14. Are systems approach principles appropriate to educational developments in today's university environments? Answer: The WETEP system is a design for the future environments in higher education and as such may contribute substantially to the utility of systems approaches in university environments in the future. (Yee, "A Cybernetic System for WETEP," Vol. I, 47-75.)

15. How is technology, especially computerization, integrated into WETEP? Answer: Technology is involved in WETEP in at least three specific ways: a) Telecommunication systems; b) Information storage and transmission; and c) Assessment of student progress and of the various components of the total WETEP system. (See: Sullivan, Ames, Iverson, and Ghattas, "The WETEP Media and Telecommunication System," Vol. I, 95-101; Yee, "A Cybernetic System," Vol. I, 47-75; and Cleary, Linn and Rock, "Assessment Procedures for WETEP," Vol. I, 109-134.)

16. Could WETEP function without extensive technology beyond that which is conventionally used today? Answer: No. A central part of WETEP is involved in the information retrieval system and in the continuous assessment made possible through the Feedback Component of the system. (See: Yee, "A Cybernetic System for WETEP," Vol. I, 47-75; Sullivan, Ames, Iverson, and Ghattas, "The WETEP Media and Telecommunication System," Vol. I, 95-101.)

17. Are new concepts in space facilities for higher education essential for the implementation of WETEP? Answer: Although WETEP can be implemented in traditional campus facilities with minor alterations, new designs are expected to enhance the feasibility of WETEP. The WETEP report includes specifications for space which is to be built into the new teacher education building on the campus at the University of Wisconsin. (See: Barrett, Ames, DeVault, and North, "Space Facilities," Vol. IV, 9-72.)

18. What will be the function of the faculty working in WETEP? Answer: The faculty will be involved in the development of aspects of WETEP and as instructional staff within WETEP. In the latter role, new responsibilities and emphases are planned. The faculty will be engaged in instructional guidance roles extensively and will assume less responsibility for direct information transmission than has been done in traditional programs. (See: Kean and Ubbelohde, "New Roles for University Faculty," Vol. I, 88-93.)

19. Does WETEP assume all educational objectives can be stated in behavioral terms? Answer: Not all of the WETEP objectives are stated in behavioral terms. In fact, WETEP raises many questions about the most appropriate way of stating objectives to serve the purposes of WETEP. (See: Ammons, "Cognitive and Affective Levels in Teacher Education," Vol. I, 77-82; and the variety of ways in which objectives are stated in each of several elements in Vols. II and III.)

20. How can the massive assessment tasks be developed, maintained and evaluated? Answer: This essential assessment aspect of WETEP can be achieved only through the creative design of new assessment instruments and new management systems designed for the compilation, storage and retrieval of assessment data. (See: Cleary, Linn and Rock, "Assessment Procedures for WETEP," Vol. I, 109-134; Yee, "A Cybernetic System for WETEP," Vol. I, 47-75; and Sullivan, Ames, Iverson, and Ghattas, "The WETEP Media and Telecommunication System," Vol. I, 95-101.)

21. How will students' progress be assessed in WETEP? Answer: Assessment of student progress will be made in at least three ways. Curriculum imbedded assessment and computer-assisted assessment as an integral part of each instructional module will be supplemented with assessment during individual student conferences with faculty. (See: Cleary, Linn, and Rock, "Assessment Procedures for WETEP," Vol. I, 109-134.)

22. How do schools participate in WETEP? Answer: Participating schools play an essential role in the successful implementation of WETEP. A variety of formats for school participation is planned. (See: Personke, "The Role of the Schools," Vol. I, 141-149; and Personke, Czajkowsky, Howey, and Lange, "Curriculum and Instruction," Vol. III, 5-29.)

23. What is the impact of WETEP to be on curriculum development in the cooperating schools? Answer: Through the Midwest Individualized Learning Systems consortium, a number of cooperating schools will be involved both in curriculum development which parallels WETEP concepts of individualization and in in-service education which draws heavily on WETEP instructional faculty and materials. (See: Ammons, "Curriculum Development and Teacher Education," Vol. I, 83-85; and Personke, "The Role of the Schools," Vol. I, 141-150.)

24. Is in-service education to be provided faculty of cooperating schools? Answer: The telecommunication systems and the mobile units are designed to facilitate the provision of teacher education directly to cooperating schools. In a variety of roles, including teacher education, WETEP faculty will work directly with cooperating schools. (See: Ammons, "Teacher Education and Curriculum Development," Vol. I, 83-85; Sullivan, Ames, Iverson, and Ghattas, "The WETEP Media and Telecommunication System," Vol. I, 95-101; and Personke, "The Role of the Schools," Vol. I, 141-150.)

25. How can private (profit or nonprofit) agencies work together with the university faculty to develop WETEP? Answer: A viable working relationship between the various partners in WETEP is a growth product of the total enterprise. These relations cannot be determined specifically a priori but are developing as WETEP unfolds. (See: DeVault and Kean, "The Research Facility of WETEP," Vol. I, 104-107.)

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# WISCONSIN

# ELEMENTARY TEACHER EDUCATION PROJECT

## Volume II: Element Specifications

School of Education
University of Wisconsin
Madison, Wisconsin

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# ELEMENT SPECIFICATIONS

## Volume II

## INTRODUCTION

The instructional activities designed for the Wisconsin Elementary Teacher Education Project (WETEP) are described in papers representing each of the nineteen elements which make up the WETEP program. Volume II includes the two elements of the Input Component: Screening (SR) and Orientation (OR); and five elements of the Teaching-Learning Component: Educational Psychology (EP), Communications (CO), Mathematics Education (MA), Science Education (SC), and Social Studies Education (SS). Descriptions of other elements are included in Volume III. Figure 1 illustrates the relation of the contents of this volume to the other three volumes of this report.

The extent to which various WETEP elements have been delineated varies considerably from one element to the next. While some elements are described in considerable detail, others are represented largely in outline form. Each element is organized according to the general specifications of the systems model described in "A Cybernetic System for WETEP: A Model Design for the Preparation of Teachers."[1] The reading of the papers in this volume will be enhanced if one understands the meaning of the symbols used in the flowcharts included in the element reports.

To facilitate the reading of the flowcharts, a variety of shapes are used for the figures and a variety of letters and numerals are used within these figures. Each element is represented by a two-letter code as in Screening (SR), in Educational Psychology (EP), and in Curriculum and Instruction (CI). Entry, exit and decision points are numbered within the flowchart. Two-digit numerals represent points within the elements; three-digit numerals represent points within the subelements; and four-digit numerals represent points within the modules. The geometric symbols used and a description of their meaning follows.

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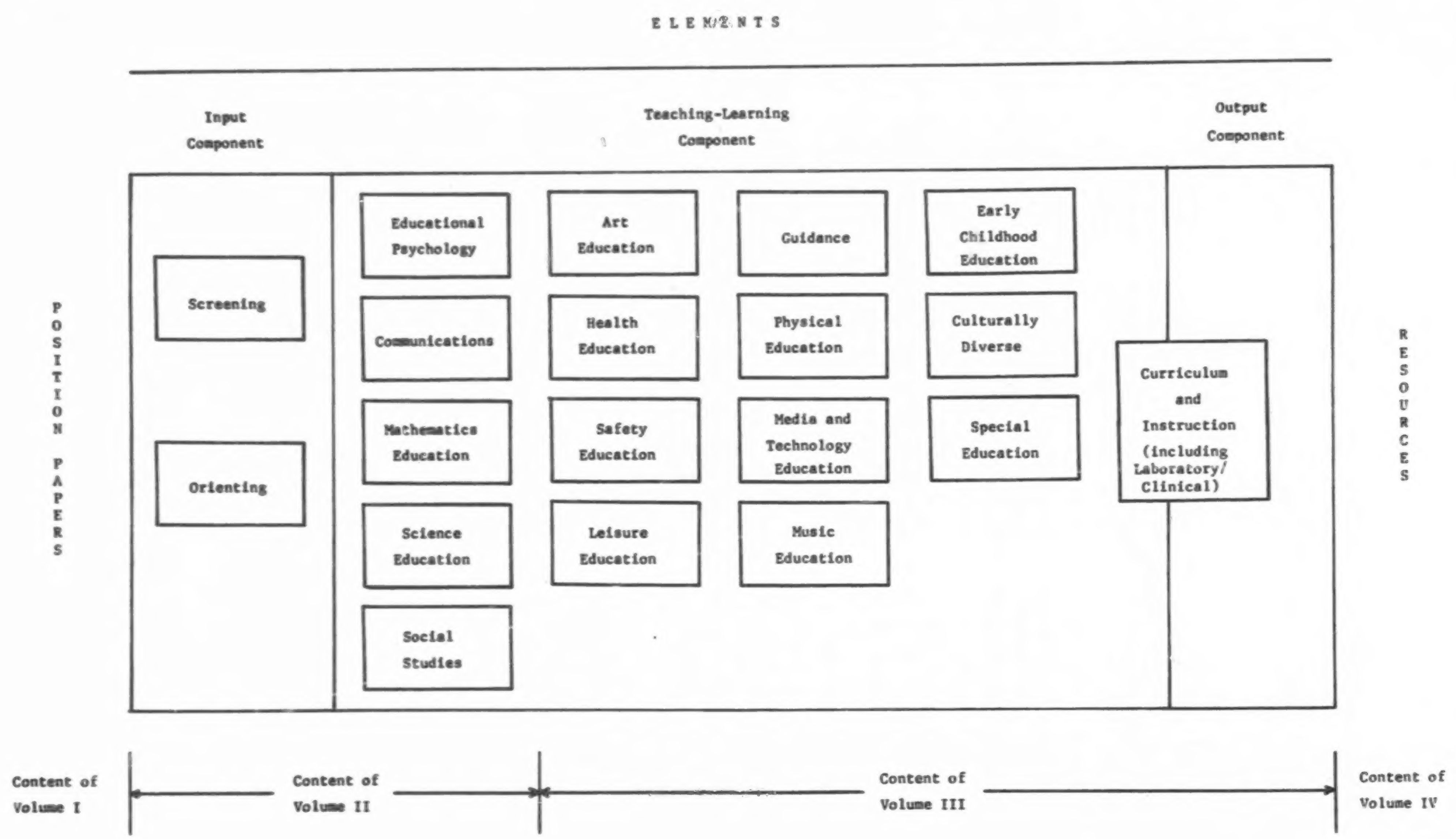
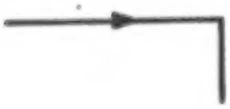
[1] Albert H. Yee, Position Paper, Volume I, Wisconsin Elementary Teacher Education Project Report.

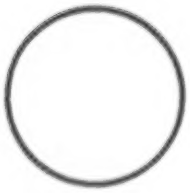

ELEMENTS
Input Component
Teaching-Learning Component
Output Component
POSITION PAPERS
Screening
Orienting
Educational Psychology
Communications
Mathematics Education
Science Education
Social Studies
Art Education
Health Education
Safety Education
Leisure Education
Guidance
Physical Education
Media and Technology Education
Music Education
Early Childhood Education
Culturally Diverse
Special Education
Curriculum and Instruction (including Laboratory/ Clinical)
RESOURCES
Content of Volume I
Content of Volume II
Content of Volume III
Content of Volume IV

ORGANIZATION OF PAPERS WHICH DESCRIBE THE
WISCONSIN ELEMENTARY TEACHER EDUCATION PROJECT

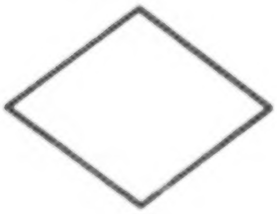
FIGURE 1



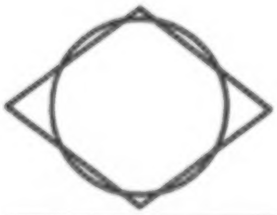
Channel   A path indicated by a flowline arrow through which communication flows within the system is a channel. The arrowhead indicates the direction communication flows.



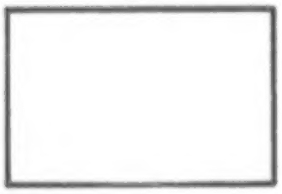
Entry and Exit Points   Entry and exit points are points at which students may enter or leave components, elements, modules, etc.



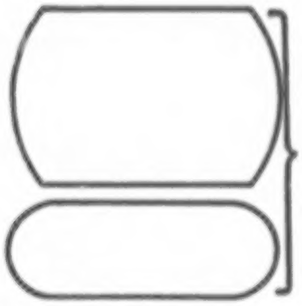
Forced Decision Point   A point where the student is forced by the system to enter one of several alternative channels is a forced decision point.



Free Decision Point   A point where the system allows the student to make his own choice of which alternative channel he will enter is known as a free decision point.



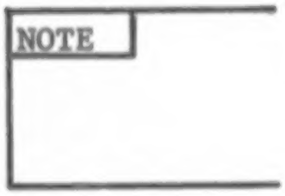
Simple Procedure   The simple procedure symbol indicates a set of objectives-operations containing no decision nor entry and exit points.



Complex Procedure   The complex procedure symbols indicate sets of objectives-operations which could be expanded into another detailed flowchart involving entry and exit points, decision points, and simple and complex procedures.

<• • •>

Replication   This symbol shows replication of identical structures.



Annotation   This symbol is used for the addition of descriptive comments or explanatory notes.

# INPUT COMPONENT: ORIENTATION AND SCREENING

Dan W. Andersen
John Cavanaugh

# INPUT COMPONENT: ORIENTATION AND SCREENING

Abstract. The introductory experiences in WETEP are designed for students who wish to examine the potential of Elementary Education as a professional field. In addition to developing an awareness of the demands and rewards of teaching children, the students are assisted in determining to some extent their own suitability for that role. Thus, both orientation and screening functions are performed at the point of the Input Component

The Input Component provides orienting, advising, and screening experiences in a systematic manner. Information about each student's abilities, interests, value orientation, attitudes, past experiences with children, and other biographical data will be garnered and made available to faculty members working with students at subsequent points in the program. The elements, subelements, and modules of the Input Component take the following form:

I. Screening Element
    A. Initial Screening: Prior to entry into Orientation Element
    B. Second Screening: Prior to entry into Teaching-Learning Component

II. Orientation Element
    A. Teacher Role Orientation Subelement
        1. Decision-making Module
        2. Communicating Module
        3. Environmental Managing Module
    B. Personal Orientation Subelement
        1. Value Clarification Module
        2. Self-assessment Module
    C. WETEP Orientation Subelement
        1. Certification Sequence/Option Module
        2. Resources (Facilities, Equipment, Materials) Module
        3. Personal Instructional Plan Module

Each of the subelements provides a framework for two or more modules or experiential units. Students are able to move into and out of each module in order to facilitate administering the element and to provide individualized sequences for students. The content and the experiences available within each module are numerous, diffuse, and varied so that students find several alternative forms to choose from in preparing themselves for the attainment of objectives associated with the module.

Essentially, the WETEP Input Component is designed to provide situations in which students can become acquainted with the design and resources of WETEP, develop an appropriate personal instructional plan within WETEP, and begin to think like teachers and to make decisions like those faced by teachers.

## INPUT COMPONENT: ORIENTATION AND SCREENING

### Rationale

The introductory experiences in WETEP are designed for students who wish to examine Elementary Education as a professional field. In addition to developing an awareness of the demands and rewards of teaching children, the students are also assisted in determining to some extent their own suitability for that role. In order for the Input Component to achieve its maximum effectiveness, it must be seen in the context of the total sequence of the Wisconsin Elementary Teacher Education Project. It provides the initial exposure to the pre-service preparation provided by the University of Wisconsin which is required of one who aspires to attain from this institution eventual certification as an elementary teacher. For the student, it provides the first serious glimpse of what teaching is and what it isn't. For the institution, it is designed to provide much information about the individual and his potential as a teacher.

The functions, which the Input Component has been devised to perform, are not new functions for the certification program. In the past, various agents of the School of Education have carried out these functions; namely, orienting, advising, and screening of in-coming students. Screening has been primarily effected through the feature of a required 2.5 or above grade point average. Advising has been provided largely by the Student Personnel Services Office and individual Elementary Education staff members. Orienting to the profession and its preparatory program provided by the School of Education has been the prime function of a three hour a week course in Curriculum and Instruction.

The Input Component provides orienting, advising and screening experiences in a systematic manner. It is argued that when a person has been oriented, advised, and screened in this manner the individual and the institution can have confidence that the student will realize maximum personal rewards from teaching. At the same time, information about each student's abilities, interests, value orientation, attitudes, past experiences with children, as well as other biographical data will have been garnered and will be available to faculty members working with students at subsequent points in the program.

This component is designed to accomplish ten major purposes at a beginning level:

1. To provide opportunities for the student to observe teachers and learners, various types of educational programs, different kinds of schools, and to react to these observations.

2. To provide situations in which the student can begin to think as a teacher, i.e., to begin to identify with the role of the teacher as it relates to various factors: student, administration,

specialists, parents, community, profession, and continuing self-education.

3. To introduce the prospective teacher to various kinds of decisions with which teachers are faced, both in and out of the classroom.

4. To provide opportunities for the student to project hypothetical decisions and to test these decisions against relevant evidence.

5. To acquaint the student with the resources and the design of WETEP.

6. To provide the student with an awareness of the total certification sequence and the various systematic options available to them within WETEP.

7. To assist the student in developing an appropriate personal instructional plan within WETEP.

8. To provide opportunities for the student to make personal assessments of his or her interests, value system, and abilities as a prospective teacher.

9. To provide opportunities for the education staff to make assessment of the individual student's interests, system of values, and abilities as a prospective teacher.

10. To provide an opportunity for the student and the institution to make an enlightened decision regarding the student's continuing participation in WETEP.

## Elements Within the Input Component

The elements, subelements and modules of the Input Component are set forth in the following outline:

I. Screening Element
  A. Initial Screening: Prior to Entry into Orientation Element
  B. Second Screening: Prior to Entry into Teaching Learning Component

II. Orientation Element
  A. Teacher Role Orientation Subelement
    1. Decision Making Module
    2. Communicating Module
    3. Environmental Managing Module
  B. Personal Orientation Subelement
    1. Value Clarification Module
    2. Self-Assessment Module

C. WETEP Orientation Subelement
  1. Certification Sequence/Option Module
  2. Resources (Facilities, Equipment, and Materials) Module
  3. Personal Instructional Plan Module

## I. Screening Element (Figure 1)

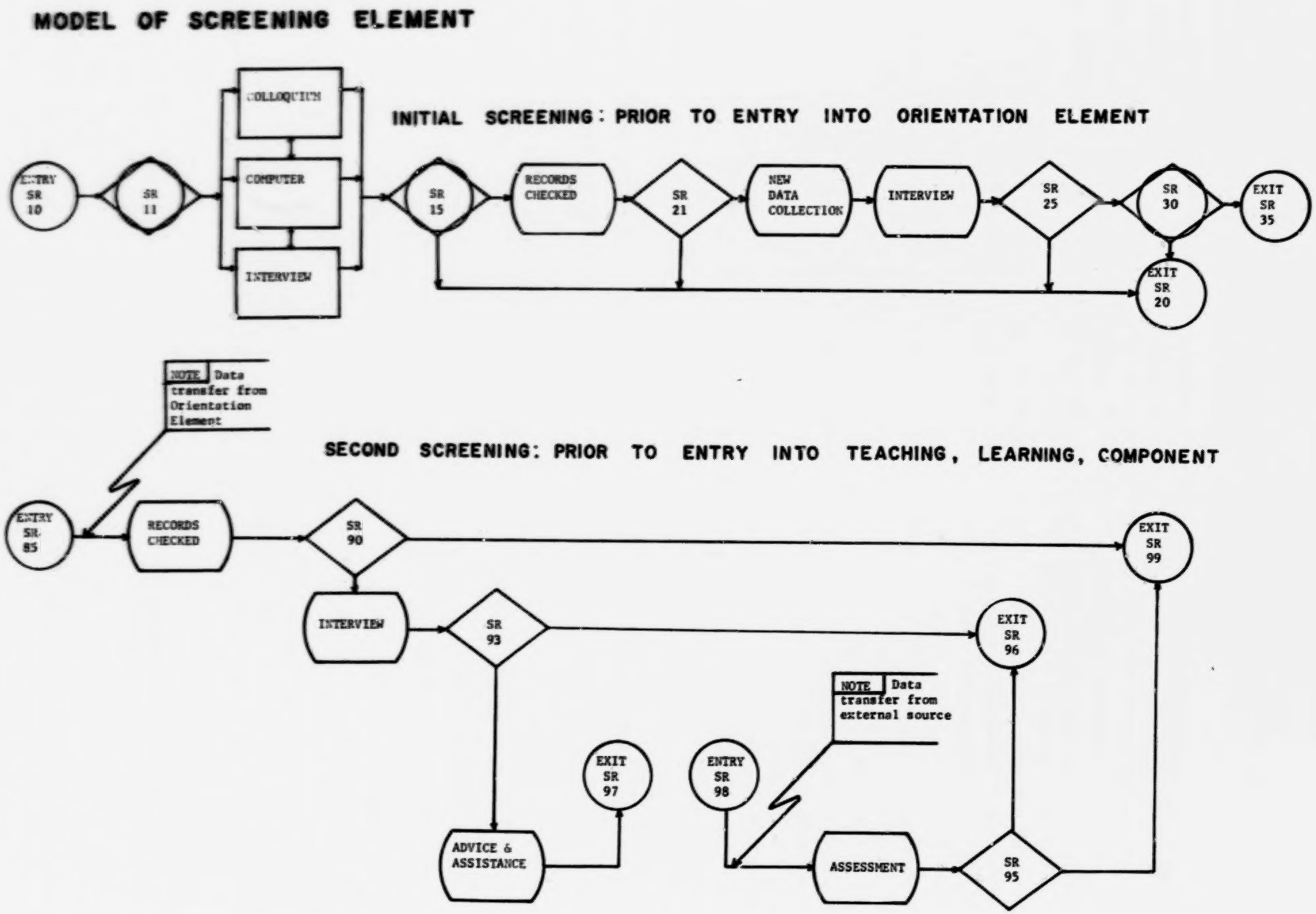
A major function of the Input Component of WETEP is the establishment of an acquaintanceship between student, program, institution, and profession. The two-way communication between the student and the other entities should result in a familiarity which is mutually beneficial. The student is able to determine his affinity for the WETEP approach to preparing elementary teachers, for the School of Education of the University of Wisconsin (facilities and staff), and for the profession of elementary teacher. Meanwhile, responsible WETEP personnel are becoming informed as to the personality, achievement, and potentiality of the student. Among the results of this interaction are: (1) the determination as to whether the student enrolls and is accepted into the orientation element, and (2) upon completion of that element a decision mutually arrived at by the student and the WETEP staff as to whether the student shall be invited to continue within WETEP. This latter decision shall be based upon self-analysis by the student, as well as institutional assessment of the student--such evaluation being an integral aspect of the Orientation Element.

### A. Initial Screening: Prior to Entry into Orientation Element

Among the thousands of young people who enter a particular college or university each year, many come determined to prepare for a career in elementary education. Others find themselves still in a quandary concerning the vocation or profession to which they ought to devote their lives. University of Wisconsin undergraduates in both of the above categories shall have available to them (Decision Point SR 11) several structured presentations which are designed to provide them with descriptive information and answers to questions they may have about the preparation program for elementary teachers provided by the School of Education. These offerings shall include:

1. A colloquium, extensively advertised and opportunely presented, designed to provide all students in attendance with a succinct overview of the major features of WETEP and the elementary teaching profession.

2. Computer assistance in the answering of routine questions posed by the student. Queries generated by the colloquium as well as other elucidation desired by students on topics not provided for in that general presentation, may be put to a specially programed computer. The existence, location, and potential value of the computer as a source of information is spelled out in the colloquium.


MODEL OF SCREENING ELEMENT
INITIAL SCREENING: PRIOR TO ENTRY INTO ORIENTATION ELEMENT
ENTRY SR 10
SR 11
COLLOQUIUM
COMPUTER
INTERVIEW
SR 15
RECORDS CHECKED
SR 21
NEW DATA COLLECTION
INTERVIEW
SR 25
SR 30
EXIT SR 35
EXIT SR 20
NOTE Data transfer from Orientation Element
SECOND SCREENING: PRIOR TO ENTRY INTO TEACHING, LEARNING, COMPONENT
ENTRY SR 85
RECORDS CHECKED
SR 90
EXIT SR 99
INTERVIEW
SR 93
EXIT SR 96
NOTE Data transfer from external source
EXIT SR 97
ENTRY SR 98
ADVICE & ASSISTANCE
ASSESSMENT
SR 95

MODEL OF SCREENING ELEMENT

Figure 1

3. An interview between WETEP personnel and students. Many students have questions and concerns which are or seem to them so unique that neither the colloquium nor the computer program shall be capable of providing satisfactory clarification. In such an instance, trained counselors and advisors shall be available to answer the student's questions.

Following any or all of the above contacts, the student may decide (Decision Point SR 15) to apply for permission to enroll in the Orientation Element. To do so he fills out an appropriate form which indicates his intent to seek admission and which also releases to the School of Education that biographical data concerning him accumulated in the university registrar's office.

The bio-data thus available to WETEP staff personnel serves as an aid in culling obvious misfits out of the list of potential enrollees in the program (Decision Point SR 21). Such data includes, high school transcripts, university entrance examination scores, and present university grade point average.

Once the bio-data has been analyzed by the WETEP staff personnel section, the student is invited to appear for a possible additional assessment and an interview. The new data collected at this point will finally determine (Decision Point 25) whether the aspirant has sufficient potential to be permitted to enter the Orientation Element (Exit SR 35).

The present assumption that elementary teachers should be possessed of demonstrated intelligence shall be honored with the 2.5 grade point average as a minimal standard for 80% of those admitted to the Orientation Element. The remaining, approximately 20% of the students, shall be members of a special section. These persons shall be identified as coming from economically and/or socially deprived backgrounds, or as individuals with questionable academic credentials but who enthusiastically desire to teach in areas where the profession is in dire need of such enthusiasm, e.g. urban ghettos, Indian reservations, poverty-stricken rural areas, etc. These individuals shall be especially recruited on the basis of at least one of the above criteria. While sharing with other students much of the usual Orientation Element, content and experiences, this group consisting of approximately 20% of the course population, shall receive special remedial work and individual tutorial assistance designed to ready them for the acquirement of those special skills and understandings expected of them in the Teaching-Learning Component. To some extent special forms and levels will be present in the Orientation Modules to ready these students for the assessments.

Early in the Orientation Element an instrument devised to assess the personality traits of the students shall be administered. Students, rating especially low on traits determined to be necessary or desirous in an elementary teacher, will be singled out (Decision Point SR 25) for further testing, counselling and perhaps removal from enrollment in the element (Exit SR 20).

### B. Second Screening: Prior to Entry into Teaching-Learning Component

The Orientation Element is a pre-education course in that students enrolled in it do not become eligible for admission into the School of Education until they have completed the course and have qualified for admission via screening standards such as the following selection criteria:

1. An affirmative decision on the part of the student to apply for admission to the Wisconsin Elementary Teacher Education Project.

2. The student's GPA (grade point average) prior to enrollment in the Orientation Element.

3. Demonstrated speech proficiency.

4. Prior experience of the student such as: Teacher Aide (lay assistance to a teacher), VISTA, Peace Corps, or other evidence of professional motivation.

5. Recommendation of the student by an instructor based upon successful course completion, observation of, and interviews with the student.

6. A satisfactory score on some form of measurement designed to ascertain adaptiveness and flexibility.

7. Other criteria to be determined.

Selection criteria are to be upgraded periodically on the basis of feedback information from the other components in the system and from quality of performance in the classroom following certification. The validity of such criteria is to be constantly evaluated in terms of their predictive potential.

Due to the fact that only a specified number of students can be granted admission to the Teaching-Learning Component of WETEP each semester, an additional selection criterion has thereby been added--that of priority assignment for admission to a program with limited membership.

At some point in time late in the semester, the instructors of the Orientation Element and other appropriate personnel shall make a systematic evaluation of data collected on all enrollees in the course for the purpose of recommending (Decision Point SR 90) those to be admitted (Exit SR 99) to the School of Education at the beginning of the next semester. Such data providing a profile of each candidate and collected at various assessment points within the Input Component places the WETEP staff in a position to estimate each student's probable success in the WETEP preparation for and eventual performance in the role of elementary school teacher.

A denial of admittance at this point is not intended to completely block a person from ever entering WETEP (Exit SR 97, Entry SR 98). Collected data may show that additional study, higher academic performance, maturing, or work with children is needed before a final determination concerning a candidate's application can be made. Candidates who have been denied (Decision Point SR 90) admission due in part to the limited capacity of the Teaching-Learning Component and in part to their deficiencies may be advised to look elsewhere (Exit SR 96) for a career other than that of elementary education. The remainder will be invited to meet individually with WETEP personnel who have carefully scrutinized and diagnosed all information which has been compiled regarding the student.

In the interview between the student having deficiencies and the faculty (e.g., fields of psychology or behavioral disabilities, depending upon the student's deficiency) a plan for correcting the student's critical inadequacy shall be established. Various agencies on campus have facilities and trained specialists whose services will be utilized by WETEP in behalf of those students. The following examples may make this scheme more apparent: Reading Service has a student counselling center for those with reading deficiencies; Speech and Hearing Clinics are available for therapy and direction for correction of defects; the Department of Psychiatry has a Psychiatry Inpatient Service which can be made available to students with behavioral or emotional disorders caused by mild neuroses. Students who were ill at ease with children, finding it difficult to identify and communicate with them, shall be placed in contact with community agencies in the Madison area. Such students may wish to work with small groups in a counselling or leadership capacity such as those established via Boy Scouts, Girl Scouts, Campfire Girls, YMCA, YWCA, etc., or they may have a greater need for one-to-one experience such as may be possible in tutorial service.

Responsibility for completing the plan to remedy his personal and program deficiencies resides in the student (Exit SR 97). When the specialist aiding these students adjudge their progress to have been sufficient, the student shall re-enter WETEP (Entry SR 98). A decision (Decision Point 95) will be made by WETEP personnel at that point whether to admit the student directly into the Teaching-Learning Component (Entry SR 99). In some instances, they may have the student re-enter (Exit SR 96) the Orientation to Elementary Education Element and certain of its modules. There the student will demonstrate an ability to perform satisfactorily the assessments associated with certain behavioral objectives which were unsatisfactorily performed by him when first passing through the element. Successful performance at this point will assure him of nomination for the student's entry into the Teaching-Learning Component.

## II. Orientation Element (Figure 2)

Public and private elementary and secondary schools of this nation are presently involved in the assimilation of a number of innovations. These innovations, the products of intense experimentation in demonstration districts, are bringing about massive change in the construction, layout, and equipment of school buildings, in the organization of curriculum and teaching-learning arrangements, and finally the teacher's role and methodology. While teacher training institutions, such as the University of Wisconsin, have been cognizant of, and indeed have initiated and accelerated many of these changes through their research and dissemination functions, few of these innovations have penetrated the approach to instruction in higher education.

It is the intent of WETEP to prepare its students for their entry as interns and eventually as full-fledged teachers into what will commonly be a dynamic educational setting. In order that graduates from this program shall be acclimated to team teaching, multi-media aided large group instruction, individualized instruction, non-graded schools with each child progressing at his own rate, computer-aided instruction, etc., similar modes of instruction and technology shall be designed and utilized in the educational program which shall orient and prepare them for the teacher's role.

Assumptions underlying the Orientation Element are:

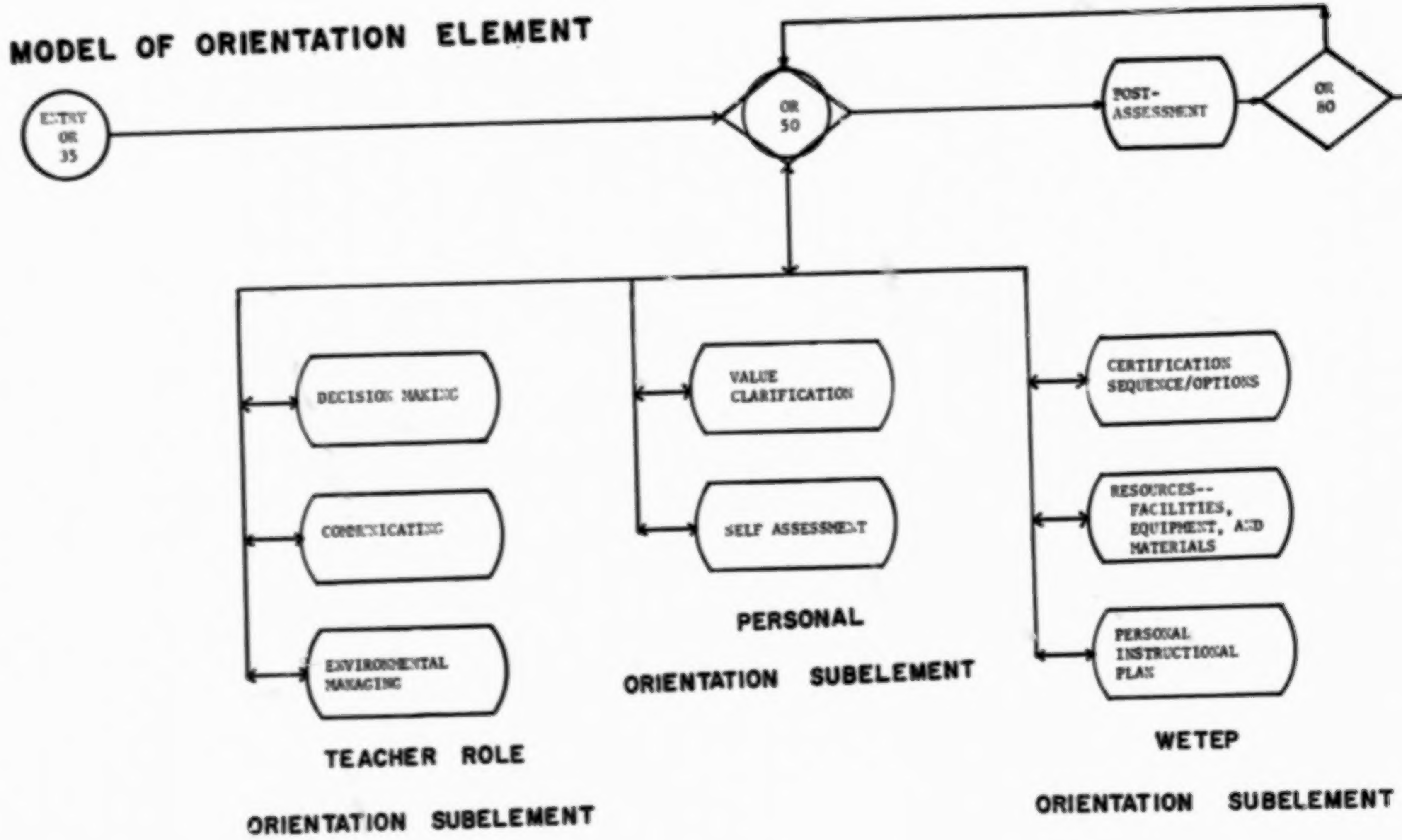
1. Demonstrated behaviors will be primarily at the lower cognitive and affective levels, i.e. knowledge and awareness.

2. The element will be team taught; large group instruction sessions will be carried on in an auditorium utilizing multi-media instructional facilities alternated with small group seminar sessions.

3. Perceptual, attitudinal and achievement data will be gathered on all individuals within the element.

4. The element is designed to provide students with a notion of the elementary school, the population having roles within or associated with it, and in particular, the teacher's role.

5. Rather than providing in-depth study and mastery of a limited number of concepts, skills, etc., the students in this element are to be provided with as great a variety of experiences as possible which will depict for them the scope, the responsibilities, and the processes inherent in the elementary teacher role.


MODEL OF ORIENTATION ELEMENT
ENTRY OR 35
OR 50
POST-ASSESSMENT
OR 80
EXIT OR 85
DECISION MAKING
COMMUNICATING
ENVIRONMENTAL MANAGING
TEACHER ROLE
ORIENTATION SUBELEMENT
VALUE CLARIFICATION
SELF ASSESSMENT
PERSONAL
ORIENTATION SUBELEMENT
CERTIFICATION SEQUENCE/OPTIONS
RESOURCES-- FACILITIES, EQUIPMENT, AND MATERIALS
PERSONAL INSTRUCTIONAL PLAN
WETEP
ORIENTATION SUBELEMENT

MODEL OF ORIENTATION ELEMENT

Figure 2

6. Although students are to be exposed to a variety of teaching methods and strategies, they will not be expected at this time to develop personal expertise in the area of teaching skills.

7. The element will provide opportunity for extended personal interviews aimed at developing the student's own individualized program for teacher preparation.

### A. Teacher Role Orientation Subelement

This subelement is fundamentally an introductory inquiry into the nature of teaching. By providing a thousand slices from lives of elementary teachers, the issues, problems, and rewards which confront that role are illustrated within three modules. In the first, the bases for making decisions concerning issues and problems are examined. In the second, the means and modes of communication so vital to human relations both within and outside the classroom are identified. In recognition of the elementary teacher's major concern as being the school and the students within it, a third focus of teacher role orientation has been identified as environmental management.

These three modules or processes--decision making, communicating, and environmental managing--provide experiences including the observing of teachers at work through the media of films, filmstrips, video tapes, closed circuit TV, actual classroom presentations, participating with children in micro-teaching episodes, simulated laboratory experiences, and volunteer tutorial work. Two-way closed circuit video discussions with classroom teachers, supervisors, and principals will provide still other opportunities for increasing awareness of the teacher role and its relationship to the team effort required within a school. The student is presented with a number of vicarious and live teaching demonstrations, some considered "good" and others "bad," but representing a range of quality in which the student may actively participate in observing and analyzing the effects of various instructional techniques on pupils. Some opportunity is given students to employ the benefits of this observation and analytical knowledge in an abbreviated teaching situation. Hopefully, what derives from this strategy is a student with improved classroom observation skills and an increased knowledge of what it is to be a teacher. As a result of these experiences the student may begin making serious plans about teacher preparation or might conclude that he possesses neither the talent nor the inclination to become a teacher.

### B. Personal Orientation Subelement

The Input Component has as a major function the gathering of information concerning the potential entrants to WETEP. An initial diagnosis of each student's needs is directed to the end of providing the personalized instruction most appropriate to the student. Such diagnosis and consideration of the individual is a part of the general climate experienced by the student throughout his period of preparation in that significant appropriate data concerning his characteristics, behavior and background experiences are transmitted through the instructional management system to parallel his progress through WETEP.

Although data and evaluations are useful to the staff of WETEP as a means of becoming acquainted with the ability and personality profiles of the students, such information is not gathered merely for that purpose. The intention of the accumulation of information from and about the individual student at this time is to share that information with the student. Faculty members together with the student examine that student's biographical data, his value system, his aptitudes, etc., and derive from such inquiry certain insights and interpretations. While the primary goal of such an exchange is to increase the staff's comprehension of the student, and the student's comprehension of himself, a critical secondary goal is the student's experience in self-analysis through inquiry (e.g. through guidance he becomes able to discover and formulate his system of values which forms the basis for his attitudes toward others, his behavioral motives and his personality need). It is an early experience for him in becoming cognizant of the means of attaining and helping others to attain self-actualization.

### C. WETEP Orientation Subelement

In addition to gathering information about the student, the Orientation Element shall be responsible for counselling and guiding the candidates. Types of advisory activities presently envisioned for this subelement include:

1. A group advising session in the very early part of the course outlining the general requirements, professional educational sequence, and areas of concentration. Counselors from the Office of Student Personnel Services are to handle the basic presentation after which small groups are to be formed to talk with elementary education staff members about general education and other professional education concerns. This session should take care of a large majority of the "walk in" questions now being handled by individual staff members and save the advising function by the educational staff for the real individual professional needs.

2. Computer assistance in the answering of routine questions by students. The student is able to seat himself at a console, communicate his questions, and receive an immediate response from the computer. For example, should the student want advice as to what general education options might be most appropriate for him, he would indicate via teletype his own background, course experiences, and preferences. The computer would then advise the student as to the most rational direction for him and alternative procedures to be followed in the process.

3. The faculty will serve as personal advisors to those students within their respective sections. During the course, conferences are to be held with each student which will provide the opportunity to pursue in some depth his value system, interests, and concerns in becoming an elementary school teacher. Such interviews provide the instructor with added insight as to the characteristics and potential of the student in becoming an elementary school teacher. The faculty begins to direct the student toward a sequence which appears to be appropriate to the needs, interests and value system of the individual. This is to be done in conjunction with appropriate supporting staff members who assume counselling roles for these persons upon entrance into the School of Education. Again, this program shall vary with the individual depending upon the diagnosis of his needs, strengths, shortcomings, and wants. Some may require further studies in language, mathematics, or the social sciences; perhaps some may require more familiarity with real community and world affairs; while others show considerable strength in preliminary professional studies and readiness to begin more challenging work, especially in special areas of interest.

Other activities associated with this subelement are clarified through the behavioral objectives listed in the appropriate section below.

## Relationship of the Orientation Element to Behavioral Objectives

Each of the subelements described above provides a framework for one or more module or experiential unit. Students are able to move into and out of each module in order to facilitate administering the element and to provide individualized sequences for students. The content and the experiences available within each module are numerous, diffuse, and varied so that students find several alternative forms to choose from in preparing themselves for the attainment of objectives associated with the module. Attainment assessments take the form of satisfying minimal levels of performance as outlined in the element's behavioral objectives. Each module has associated with it a number of behavioral objectives which have been drawn from the subelement suggesting that particular experiential unit. In addition, other subelements contribute behavioral objectives which are appropriately related. Each time a student comes in contact with a particular behavioral objective, a higher level of sophistication may be the criterion of performance.

### A. Teacher Role Orientation

1. Decision Making: The student shall exhibit a comprehension of the decision making process as an aspect of the teacher role by relating relevant facts and consequences to a background of values and value conflicts in two types of situations: (1) as an observer, analyzing the effectiveness of decision making by others, and (2) as a decision maker in both simulations and actual interactions with children.

## The Cognitive Domain

| Objectives | Evidence |
|---|---|
| Knowledge The student should: | |
| 1.101 Know the roles, designated positions or status within the educational organization which tend to define the behavior of the elementary school teacher. | 1.101(a) Be able to describe the jurisdiction and responsibilities ascribed to the School Board.<br>(b) Be able to describe the jurisdiction and responsibilities ascribed to the superintendent.<br>(c) . . . ascribed to the building principal.<br>(d) . . . ascribed to the supervisors et. al.<br>(e) . . . ascribed to the classroom teachers as a faculty. |
| 1.102 Have knowledge of the interdependence between the elementary teacher and others in the making of decisions. | 1.102(a) Be able to identify instances wherein the elementary classroom teacher might share decision making with pupils.<br>(b) . . . with a supervisor.<br>(c) . . . with a counselor.<br>(d) . . . with a principal.<br>(e) . . . with other classroom teachers. |
| 1.103 Know that the teacher role is defined by the expectations others within the educational organization have for that role and that the expectations held by others for the teacher role are often in conflict. | 1.103 Be able to describe examples whereby a teacher must make a decision despite different expectations held by the principal vs. a supervisor as to what the decision by the teacher shall be. |
| 1.104 Know a variety of restrictions and guidelines which are often a part of the teacher's environment and thus have to be taken into consideration at the time of decision making. | 1.104 Be able to list a variety of restrictions and guidelines which express role expectations for the classroom teacher; e.g. job descriptions, statements of policy and regulations, supervisory conferences with superordinates, course descriptions, provisions for physical facilities (the |

| Objectives | Evidence |
|---|---|
| | kinds of classrooms, furniture, and equipment and provisions for instructional materials. |
| 1.105 Know of the kinds of decisions which teachers within a school or an entire district may make as a whole or by duly appointed committees. | 1.105(a) Be able to describe the relationship in group decision making between (1) the degree of responsibility and authority granted to a faculty by superordinates, and (2) the importance of those decisions--the degree of finality.<br>(b) Be able to list the kinds of decisions district teachers make as a group or within committees pertaining first to affiliation with a professional association or union, and subsequently to decisions made within such an association, e.g. collective negotiations, representation at conventions, etc. |
| Comprehension | |
| 1.201 Be able to predict within reasonable limits, the probable outcome of decision making alternatives available to a teacher given typical classroom problems. | 1.201 Be able, in writing or orally, to describe outcomes which he would expect to occur as a result of selecting various decision making alternatives open to a teacher given a specific situation be it a live or videotaped classroom observation, or a filmed or role-played simulation of an elementary classroom situation. |
| 1.202 Be able to interpret why a teacher might have chosen a particular solution to a spontaneous problem. | 1.202 Be able to interpret and provide evidence as to why a teacher may have functioned in a particular manner given specified conditions.<br>(a) an emergency<br>(b) a discipline problem<br>(c) an "ambiguous" situation in a classroom (absence of policy or conflicting expectations for the teacher by superordinates). |

| Objectives | Evidence |
|---|---|
| **Application** | |
| 1.301 Be able to differentiate between the types of individual decisions a teacher must make. | 1.301 Be able to identify and to discriminate into categories a number of decisions made by a teacher during a prolonged observation of that teacher and his class.<br>(a) Decisions relatively lacking in self-awareness (repetitive and habitual).<br>(b) Executive choices made within the framework of clearly established policy.<br>(c) Deliberate decisions made in the absence of clearly defined policy. |
| 1.302 Be able to apply knowledge of students as well as knowledge of institutional restrictions and guidelines in making decisions in a given teaching situation. | 1.302 Be able to demonstrate during a lesson whether it be simulated or actual, the ability to act when a decision point is reached. Preferably, a variety of decision making abilities should be exemplified.<br>(a) Positive decision--one which results in some kind of action.<br>(b) Negative decision--one which defers the making of a decision. |

## The Affective Domain

| Objectives | Evidence |
|---|---|
| **Receiving** The student should: | |
| 1.101 Be aware of the personal aspects of decisions made by a teacher. | 1.101 Be attentive to and able to discern the presence within the teacher of the emotional dimension based upon a system of values which interplays with the rational, intellectual dimension in the making of a decision which may elicit controversy. |

| Objectives | Evidence |
|---|---|
| Organization | |
| 1.401 Be aware of the dilemma often facing teachers wherein a decision must be made based upon a weighing of the relative effects upon a single/few students vs. the remainder of the class. | 1.401(a) Be able to discern and then justify or attack in terms of one's own value system decisions by a teacher which of necessity have had to favor either a portion or an entire class. These decisions will be selected from a single lenghty observation: (1) being present in an elementary classroom; (2) viewing live day television; (3) viewing a selected videotape. |
| | (b) Be able to justify orally or in writing one's own value system to a decision made by oneself in instances where by necessity a choice has to be made favoring a single/few individuals or the remainder of a class. The instances might be provided via an episode series such as SRA. |

2. Communicating: The student shall exhibit a comprehension of the pervasiveness of formal and informal communication facilities and patterns in the school district, school building, and classroom and shall demonstrate competence in inter-personal communicative skills.

### The Cognitive Domain

| Objectives | Evidence |
|---|---|
| Knowledge The student should: | |
| 2.101 Know the varying communication networks which may exist within and between the various levels of an educational organization and its environment. | 2.101 Be able to describe typical intra-school district communication networks showing possible variations using criteria of: (1) closedness-openness, and (2) no/one-way-two-way flow of ideas. |

| Objectives | Evidence |
|---|---|
| 2.102 Know suitable interaction techniques for various classroom situations. | 2.102 Be able to recall and list interaction techniques which may be useful in communicating with children in classroom situations,<br>e.g. Group Dynamics<br>Discovery Learning<br>Asking of Questions<br>(Ammons, Sanders) |
| 2.103 Know that in a dynamic school a major reason for a teacher's interaction with other teachers and with the principal and other supervisors is the continuous process of curriculum development, adaptation, and implementation. | 2.103 Be able to describe an observed work session in which a classroom teacher has contributed to the writing of course-of-study materials or adapting of a district-wide accepted curriculum to the peculiar needs of the local unit. |
| **Application** | |
| 2.301 Be able to diagrammatically describe the interaction occuring in a classroom. | 2.301 Be able to use: (a) Flanders Interaction Analysis, (b) the Bales Scale, or (c) the sociogram in a limited, carefully designed, and instructor-directed classroom observation. |
| 2.302 Be able to initiate an interaction with children in which they are moved from passivity to a give-and-take relationship with the student. | 2.302 Be able during a five to ten minute micro-teaching lesson with four or five children to (a) commence with lecturing or direction giving, then, (b) move to questioning gradually, (c) gaining student responses and some student initiation. |

## The Affective Domain

| Objectives | Evidence |
|---|---|
| **Receiving** The student should: | |
| 2.101 Be aware of techniques which are supportive of a child and promote his self-concept as a communicator. | 2.101 Be aware of and attentive to statements by a teacher which: (1) accept a student's feelings; (2) give praise; (3) accept, clarify, or make use of a student's ideas. |

| Objectives | Evidence |
|---|---|
| 2.102 Be aware of the existence of non-verbal forms of communication exhibited by both the teacher and students. | 2.102 Be aware that non-verbal communication may be positive or negative as to the effect it has upon the recipient, e.g. students displaying apathy or lack of attention may produce teacher anger, confusion or domination. |

3. Environmental Managing: The student shall observe, react to, and in some instances be able to demonstrate the inter-play between the school organization, the elementary teacher and pupil as regards curricula programs, resources for instruction, detailed planning of learning experiences and pupil control.

### The Cognitive Domain

| Objectives | Evidence |
|---|---|
| Knowledge The student should: | |
| 3.101 Know that the emphases around which elementary school curricular programs are organized result in parameters within which the individual elementary teacher is expected to function. | 3.101 Be able to describe, based partially upon observation, a continuum along which the basic orientation of elementary school curricular may lie, e.g. (a) achievement in academic fields--many separate subjects taught in isolation (assign-study-recite-test)<br>(b) logical subject arrangements but society-centered (subject matter units)<br>(c) child-centered program organized around pupil purposes and experience units. |
| 3.102 Know of certain variables which have to be considered by an elementary teacher when formulating a feasible daily schedule. | 3.102 Can explain the implications of (a) limits on attention span of elementary school children, (b) children's need for variety of activity and change of pace, (c) the limited number of desirable activities which can take place at one time, for the daily schedule as prepared by an elementary teacher. |

| | Objectives | | Evidence |
|---|---|---|---|
| 3.103 | Have observed contrasting use of resources for instruction. | 3.103 | Verbally or in writing report on paired observations focusing on flexibility in teacher management of instructional resources. |
| | Indiscriminate use of learning aids--uniform exposure to all children. ↔ | | Utilization of learning aids varying with individual needs. |
| 3.104 | Know a variety of symptoms which a child may display in the classroom which cause responsible teachers to seek attention for that child from appropriate specialists. | 3.104 | Given an appropriately designed simulation be able (a) to identify a child in need of diagnosis for possible special assistance, and (b) indicate to whom he might turn for help, e.g. child having extraordinary difficulty with reading. |

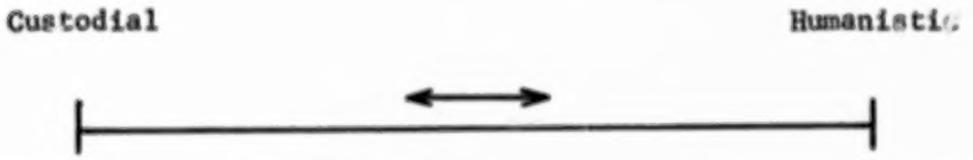
| Possible Causes | Specialist |
|---|---|
| Undernourishment | School Medical Personnel or Principal |
| Physical Disability<br>e.g. poor eyesight | School Medical Personnel or Principal |
| e.g. speech defect | Speech Therapist |
| Emotionally Disturbed (may stem from family problem) | Student Counselor |

## The Affective Domain

Receiving (Selected Attention) The student should:

| | Objectives | | Evidence |
|---|---|---|---|
| 3.101 | Be aware of the variance between elementary teachers as to the amount of "planning | 3.101 | While observing interaction between teachers and children be attentive to the presence |

| Objectives | Evidence |
|---|---|
| of learning experiences" that they share with the children. | or absence of the involvement of the children in planning for their learning experiences. |
| Valuing (Preference) | |
| 3.301 Be aware that present within each school there may be either a single "pupil control ideology" or there may be several; the latter condition perhaps being the occasion for conflict. | 3.301 Be able, following observation within a classroom, to describe the seeming "pupil control ideology" prevalent therein and to present his own position relevant to that exhibited ideology. |



| Custodial | Humanistic |
|---|---|
| Autocratic; rigid pupil control status hierarchy; flow of both power and communication is unidirectional-downward; watchful mistrust. | Classroom an educational community; members learn through interaction and experience; self-discipline; 2-way communication. |

B. Personal Orientation (Value Clarification--self and others)

1. Behavior as a Reflection of Value Set: The student, when confronted with a delineated instance of pupil behavior attributable in part to values inculcated within the child by the human milieu from which he comes, shall make judgments about: (a) the given concommitant behavior of the teacher interacting with the child; (b) the behavior or probable behavior he himself would exhibit in the situation; and (c) the values which would in part generate (a) and (b).

### The Cognitive Domain

| Objectives | Evidence |
|---|---|
| Knowledge The student should: | |
| 4.101 Know that in addition to the biological, physiological, and psychological make up of each individual student, his behavior in part is also | |

|  | Objectives |  | Evidence |
|---|---|---|---|
|  | determined by his cultural experiences and the values which are an outgrowth of these experiences. |  |  |
| 4.102 | Know that to a certain extent the average classroom has within it children who share with certain of their fellows a common subculture and attendant value system. |  |  |
| 4.103 | Have knowledge of the tendency of self and others to stereotype persons or groups by categorizing them on the basis of one or two criteria and then concluding that the persons in the category are alike in a variety of additional respects. |  |  |
| 4.104 | Have knowledge of positive and negative implications in identifying subcultural groups in the classroom. | 4.104 | Positive: Be able to identify efficient behavior on the part of self or another person where sensitivity to a group's common cultural values promotes understanding and is supportive of the self-image of persons within that group.<br>Negative: Be able to identify ineffective behavior on the part of self or another person when interacting with a particular subcultural group due to such behavior being based upon prejudice (prejudgment) or bias rather than actual character and conduct. |
| 4.105 | Know that the school often becomes the scene of the confrontation between exponents holding conflicting positions on social issues. |  |  |
| 4.106 | Know that a teacher often holds values or preferences which result in differing responses to children (ranging from positive and supportive to negative and deprecating) depending upon the individual child's capability, personality type, etc. |  |  |

## The Affective Domain

| Objectives | Evidence |
|---|---|
| Receiving The student should: | |
| 4.101 Gain satisfaction in relating to and interacting positively with a child or group of children from a subculture very diverse from his own. | 4.101 Express satisfaction with an episode in which rapport was established between himself and a child or group of children, who hold values quite different from one's own. |
| 4.102 Be sensitive to the "sharing of values" as well as the "sharing of biases" in determining open and supportive relationships among a school faculty or the formation of cliques and divisiveness within a school faculty. | |
| 4.103 Seek reactions from fellow students regarding his response to value-laden behavior which is contrary to his own value set, as a check of his own self-image in that regard. | |
| 4.104 Be aware of his probable response to a parental conference as to emotional state prior to the conference as well as the ease or defensiveness with which he would interact with parents. | |
| 4.105 Be aware of the authority as represented in the management of a school or school system and as exhibited in individual styles of authority are founded upon both institutional and individual value systems. | 4.105 Watch for instances of administrative authority being exercised in a school situation and examine one's emotional response as an indication of compatibility of his own values with those underlying the employment of authority or in the absence of compatibility whether or not he could coexist with such an authority structure. |

Objectives Evidence

4.106 Be aware of how he feels about punishment as used by others and by himself as a means of motivating children.

2. Clarification of Personal Values: Based upon what he discovers about his own values in encountering the above behavioral objectives, the student shall honestly, in an atmosphere devoid of threat, examine the entire spectrum of values he has become aware of holding and shall make judgments about whether each in turn should be retained as is or be altered.

### The Affective Domain

Objectives Evidence

Receiving The student should:

5.101 Be made aware that the WETEP faculty's knowledge of his beliefs shall not be a threat to his integrity as a person nor a determinant of his inclusion in or exclusion from the program.

5.102 Become aware that negative feelings or prejudices he may presently hold toward particular children due to their values, the subculture to which they belong, their capabilities, or their personality, are subject to change--the rate depending upon his identification and intentions toward those negative feelings.

5.103 Become aware of how his own school experiences have shaped the expectations he holds for the institution of education and the promose or sham it holds out to people.

| Objectives | Evidence |
|---|---|
| Responding | |
| 5.201 Attempt to identify his subtle as well as obvious reaction when threatened, put on the defensive, made to conform, given responsibility, freed to make decisions, praised for being resourceful. | |
| 5.202 Examine whether he disputes or accedes to the expectations held for him by the WETEP faculty. | |
| 5.203 Assumes responsibility for developing standards as to what characteristics a teacher should possess and rates himself according to those standards based upon self-awareness. | 5.203 In preparation for the interviews with his advisor and as a summary activity be able to exhibit and deal constructively with self-knowledge. |
| 5.204 Identify through self-analysis and via feedback from instructor evaluation of class performance and other assessments, the fitness of his attitudes and aptitudes for the elementary teacher role. | |

C. WETEP Orientation

1. Certification Sequence/Options: The student shall know how the various WETEP modules in the Teaching-Learning and Output Components contribute each in turn in preparing him to effectively perform as an elementary school teacher.

The Cognitive Domain

| Objectives | Evidence |
|---|---|
| Knowledge The student should: | |
| 6.101 Know the essential contribution each of the foundation courses in "School and Society" (Educational Policy Studies) has to | |

| Objectives | Evidence |
|---|---|
| offer in explaining the significance of history, philosophy or sociology for education and the elementary school teacher. | |
| 6.102 Become familiar with the present extent to which elementary schools utilize the services of special teachers of art, music, etc. as compared with leaving to the classroom teacher the responsibility for providing children with these experiences. | |
| 6.103 Know the unique structure and contribution of nursery school, Headstart type programs, and kindergarten in preparing the child for placement in first grade. | |
| 6.104 Examine the various areas of concentration carefully, keeping in mind his own interests, background, and university course work taken or to be taken outside the School of Education. | 6.104 Consider selecting an area of concentration as a means of filling a gap in his experience and preparation for the elementary teacher role. |
| Application | |
| 6.301 Optional: Select summer and part-time activities during the academic year which will acquaint him with children of various grade levels, abilities and cultural backgrounds and thus be providing him with opportunities for determining his empathy and rapport with diverse children. | |
| Analysis | |
| 6.401 Be able to distinguish between the major topics and experiences offered within each professional education course available to candidates for elementary teacher certification. | |

| Objectives | Evidence |
|---|---|
| 6.501 Select the combination of courses in this segment of the program on the basis of alleviating self-deficiencies. | |

### The Affective Domain

| Objectives | Evidence |
|---|---|
| Receiving The student should: | |
| 6.101 Be willing to receive information which may be provided as to the nature of the learning process, the manner in which knowledge may be conceptualized or acquired, the way in which children learn concepts, generalizations and psychomotor skills, and the criteria useful in determining whether a child behaves in keeping with what he knows and/or what he values. | 6.101 Attend a large group session or interact with a computerized program which is designed to acquaint him with the contributions which foundation courses in Educational Psychology can make to his development as an elementary teacher. |
| Responding | |
| 6.201 Determine his major interest and after having made that determination, should select the course which will meet that interest most appropriately. | 6.201 Having compared the foci of available courses in the area of "School and Society" select the one promising to be of greatest interest to him. |

2. Resources, Facilities, Equipment and Materials: The student shall know of the existence, location, and have some experience with facilities, equipment and materials with which at later stages within WETEP he shall have to acquire extensive expertise.

### The Cognitive Domain

| Objectives | Evidence |
|---|---|
| Knowledge The student should: | |
| 7.101 Know the location and value of BAVI, IMC, Memorial Library (potential for educational research) computer programs, | 7.101 Solve problems which will be posed by the faculty which will necessitate the use of facilities, equipment and materials, e.g. |

| Objectives | Evidence |
|---|---|
| UW conferences, community centers, research articles, dial-access system, popular wisdom, as resources to teacher and students. | BAVI - preview films and learn to operate some audio-visual equipment.<br>IMC - preview school texts to get a sense of the substantive curriculum.<br>Memorial Library - Become acquainted with a standard educational work by compiling a bibliography on a specified topic.<br>Research Articles - become acquainted with various professional and semi-professional journals.<br>Popular wisdom - education dealt with in the mass media: TV, newspapers, popular magazines. |

3. Personal Instructional Plan: The student shall provide evidence (a) of having arrived at tentative conclusions pertaining to his possessing or lacking an affinity for the teaching profession, and, (b) of having selected and being able to defend a personal program of study within WETEP.

### The Cognitive Domain

| | Objectives | | Evidence |
|---|---|---|---|
| | Application The student should: | | |
| 8.301 | Demonstrate thoughtful preparation for a structured interview with a course instructor within which the student presents and defends his total instructional plan, formulating with help and feedback from the instructor improvements and additions designed to bring about personal progress. | 8.301 | Prepare for, initiate and attend a structured interview with a course instructor (a definite procedure being followed in order to deal with specific concerns). |

| Objectives | Evidence |
|---|---|
| **Evaluation** | |
| 8.601 Report in a subsequent unstructured interview with a course instructor alterations in total instructional plan, self and external assessment of self, and progress toward the agreed upon program of activity conceived at the previous interview. | |

## The Affective Domain

| Objectives | Evidence |
|---|---|
| **Responding** The student should: | |
| 8.201 During the interview, respond to efforts by the instructor which are designed to draw out the students' frustrations, doubts, development, and satisfaction pertaining to identification with the role of the elementary teacher. | |

## EDUCATIONAL PSYCHOLOGY

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## EDUCATIONAL PSYCHOLOGY

Abstract. The educational-psychology element of WETEP develops in students an understanding of principles of human development, learning, and measurement & evaluation through flexible, individualized programs of study. The three areas comprise the educational-psychology subelements. They are closely integrated with other aspects of WETEP, servicing such elements as Communications, Science, Health, Social Studies, and Special Education.

Within each subelement, subject matter is further subdivided into modules, each of which contains the following sequence of instructional activities:

A prospectus: A preview of the modular content and its educational relevance.

A pre-test: An instrument to assess the student's subject-matter proficiency, eg. adequacy of preparation or need for supplementary study.

The instructional unit: An organized presentation of content designed to achieve the objectives of the module.

A post-test: An instrument to evaluate the student's mastery of modular material.

The order or sequence in which students may study the content of different modules is determined on the basis of four interlocking considerations: 1) special prerequisites for certain modules; 2) objectives of other WETEP elements; 3) professional advice or counselor recommendation; 4) student's personal choice where elective options are available.

Access to each module may be gained by passing through a basic introductory module, by showing evidence of previous mastery as indicated by attainment profiles, or by successful performance on preassessment instruments. The modules are organized on a continuum distinguished by three levels, ranging from the general to the specialized. The general level includes survey material, generalizations, and data which introduce students to basic introductory content. The second level modules offer more specific knowledge and introduce sophisticated analyses. The third level modules are highly specialized and are designed to meet particular needs of individual students. Modular content is presented using different media and clinical/laboratory experiences. Where relevant, cognizance is taken of developmental and social class differences.

# INTRODUCTION

The educational psychology element centers on developing in students an understanding of principles of human development, learning, and measurement & evaluation through flexible, individualized programs of study. It is designed to offer them the opportunity to attain their educational objectives in courses of study that facilitate particularized sequencing, independent rates of progress, and easy access to an exceedingly wide variety of instructional materials. Students with special interests, for example, may use the resources of the element for developing study programs that enable them to pursue these interests and to maximize the effectiveness of the time they invest. Thus, through utilization of technological resources, the element unburdens both instructor and student from routine classroom tasks and enables them to affirm the humanized factors in education.

Educational psychology is closely integrated with other major aspects of the Wisconsin Elementary Teacher Education Project (WETEP). It services such elements as science, mathematics, communications, health, and special education. In turn, the impact on the learning of educational psychology is enhanced through student participation in these other elements and especially through clinical and laboratory experiences.

The general objectives of the educational psychology element are articulated in Table 1. The three first-level objectives pertain to human development, learning, and measurement & evaluation subelements, respectively. Each of these is specified in greater detail by second-level objectives.

To enable students to realize these objectives most effectively and efficiently, both the content and procedures for the element have been highly structured. The content of the element is divided into three sections identified as the subelements of human development, learning, and measurement & evaluation. Figure 1 illustrates these subelements and also specifies three dimensions of content; namely, level, form, and modular content. The second-level objectives (Table 1) constitute the basis for differentiating the rows on the front face of the cube. Each row represents a category that provides the basis for the contents of different "modules," the fundamental units of instruction. The columns of the cube (labeled 1, 2, and 3) describe levels, which form a continuum from left to right, and show the degree to which modules acquire increased content "depth" and specialization. The layers of the cube (A, B, C, D, E, F) depict the different ways in which modules may be formed, depending on selection of media, age-level emphasis, and clinical/laboratory experiences.

A precise understanding of the function of the dimensions--modular content, level, and form--is essential to the meaning of the detailed discussion that follows; therefore, each of the three is discussed briefly below.

Modules: The module is an arbitrarily defined unit of instructional content. The extent to which the subelements are divided into modules depends on the relative diffuseness or specificity of the subject matter. Distinctions among different modules are determined largely by the state of basic research and educational priorities. Specific objectives for the module "identification," for example, may be delimited relatively easily, whereas those of "computer simulation of brain functions" may be more difficult to set forth from presently available research data.

Modules may require both prerequisites and predetermined sequencing. The issue of prerequisites is resolved by allowing access to each subelement module through introductory modules, evidence of previous mastery as indicated by attainment profiles, or successful performance on preassessment instruments. A basic, introductory module in each subelement, serves as a prerequisite for further subelement work. The order or sequence in which students may study the content of different modules is determined on the basis of four interlocking considerations: (1) special prerequisites for certain modules, (2) the objectives of other WETEP elements, (3) professional advice or counselor recommendation, and (4) students' personal choice where elective options are available.

Levels: The columns of Figure 1 show that the modules extend from general to specialized. The general level (1st) includes surveys, generalizations, and data that introduce students to basic introductory content. This basis prepares students for second-level modules which offer more specific knowledge and sophisticated analyses. The third level meets the particular needs of the individual. At this point in the training sequence, professors may organize unique, temporary modules for individual students, drawing upon those of different subelements and even elements. Students seeking specialized knowledge, for example, may study simultaneously psycholinguistics, science, and identification theory. The first- and second-level modules will be more automated than the third. Although the former will rely more on programmed resources and draw heavily on computer assessment techniques, both instructors and their assistants, through direct interaction, will personalize the learning and evaluation process. Even though the third-level modules are highly specialized, at the first level, a student or a small group may utilize an instructor or teaching assistant to moderate discussions, answer specific questions, clarify relationships, and assist in laboratory and clinical experiences.

TABLE 1

## EDUCATIONAL PSYCHOLOGY OBJECTIVES

1) Students demonstrate proficiency in the use of psychological principles of human development with children in school teaching-learning units.

   1.1 Judge pupil behavior within the theoretical framework of fundamental principles of human development.

   1.2 Judge pupil behavior in the normative context of cognitive and physical maturation.

   1.3 Evaluate such personality processes as identification.

   1.4 Evaluate personality dimensions such as dependency and aggression.

   1.5 Judge important societal influences affecting pupils' social adjustment and hygiene.

2) Students demonstrate proficiency in the use of psychological principles of learning with children in school teaching-learning units.

   2.1 Judge pupil behavior within the theoretical framework of fundamental principles of learning.

   2.2 Evaluate models that describe both the kinds and the ways in which learning experiences may be organized.

   2.3 Judge the important factors that influence pupils' learning.

3) Students demonstrate proficiency in the use of psychological principles of measurement & evaluation with children in school teaching-learning units.

   3.1 Evaluate measurement and test theory in the context of evaluating teaching-learning processes.

   3.2 Evaluate techniques and instruments effectively in teaching-learning situations.

   3.3 Apply principles of measurement and test theory in the construction of instruments of evaluation.

   3.4 Acquire rudiments of educational research methodology.

Forms: The layers of Figure 1 suggest different ways of presenting modules. The implementation depends upon integrating library facilities, age-level emphasis, clinical/laboratory experiences, and social-class variables, respectively.

(A). Library facilities: Modules are organized utilizing automated and self-instructional materials (linear and branching programmed texts, films, closed circuit TV, videotapes, dial access, reading references, tutorial programs, and textbooks). Small group meetings and seminars are also included. These contribute especially to intensifying personal relations between instructors and students. The content of each module will be indexed at a central file-access station and will be cross referenced with subject-matter and other modules, educational issues of major importance to aspects of WETEP, and current staff research programs. Computerized control systems will be employed for record keeping and construction of attainment profiles.

Library facilities also include conventionalized study carrels, seminar rooms, and video-viewing rooms. Further, school rooms constructed for live communication via video-viewing from the Teacher Education Building will facilitate rapid communication by persons spatially remote from one another. A professor in educational psychology, for example, might seek to contact simultaneously a curriculum professor, cooperating teacher, and student. Assuming that such persons are in the location in which they generally work, he will be able to establish a multiple-channel audio and video hook-up by simple dial and switch procedures.

(B). Age-level emphasis: In situations where subject matter is sufficiently discrete, the educational-psychology modules may be developed to emphasize a specific age level. The preschool, kindergarten, primary, and intermediate grade levels provide the likely groupings for differentiation.

(C). Clinical/laboratory experiences: Types of experiences will include both informal and highly structured activities. These may encompass simulated events, micro-teaching, and advanced teaching opportunities. These may also include nonschool related activities.

(D). Social class: Material may be organized to emphasize cultural groupings including the disadvantaged, middle-class, and affluent, or special groupings including the mentally retarded and the superior achiever.

## SYSTEM MODELS FOR THE SUBELEMENTS AND MODULES

Two models are presented in Figures 2 - 4 to describe graphically the probable learning sequences of the educational-psychology element. Each of the systems encompasses multiple alternatives that allow for

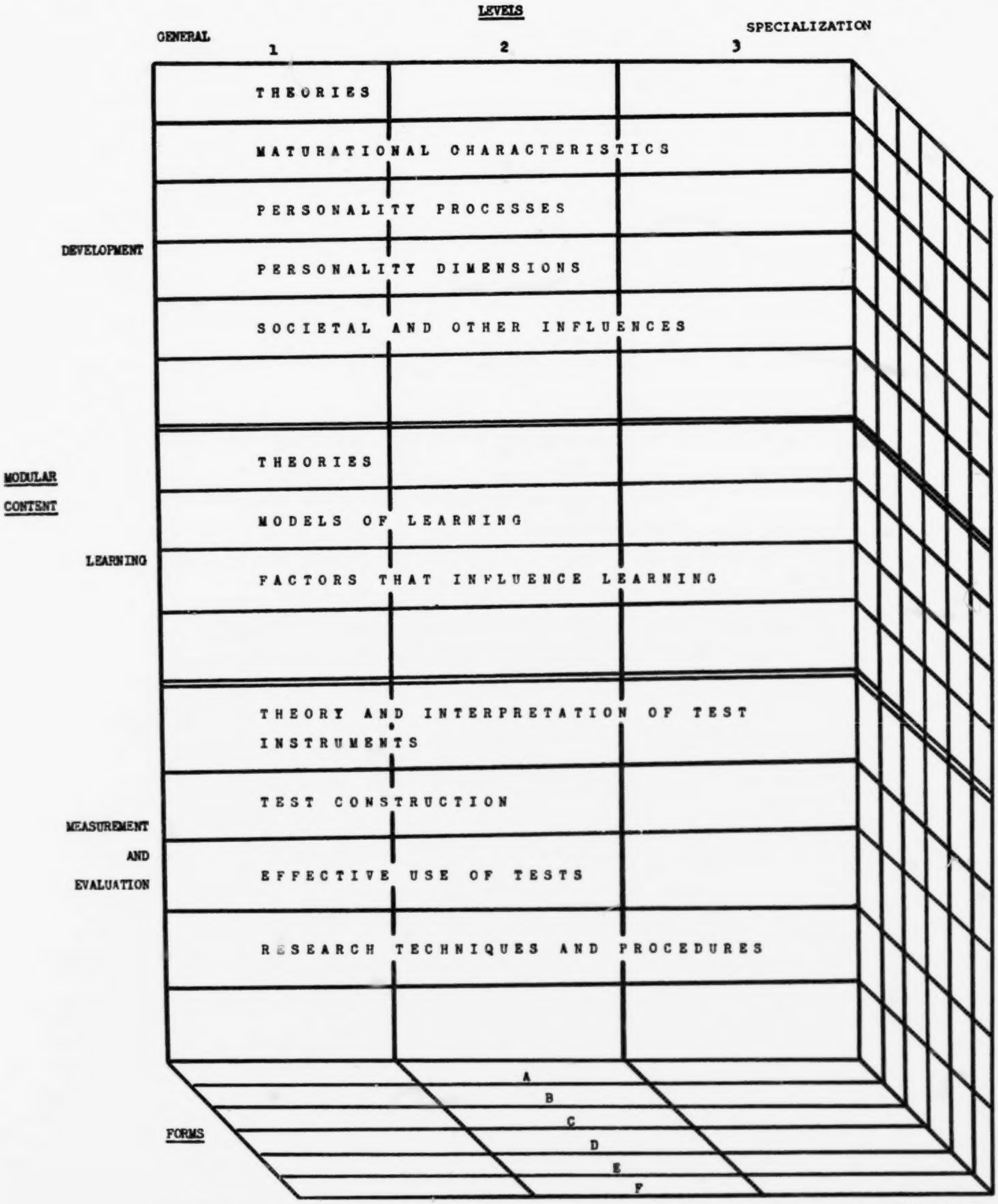

LEVELS
GENERAL
SPECIALIZATION
1
2
3
DEVELOPMENT
THEORIES
MATURATIONAL CHARACTERISTICS
PERSONALITY PROCESSES
PERSONALITY DIMENSIONS
SOCIETAL AND OTHER INFLUENCES
MODULAR
CONTENT
LEARNING
THEORIES
MODELS OF LEARNING
FACTORS THAT INFLUENCE LEARNING
MEASUREMENT
AND
EVALUATION
THEORY AND INTERPRETATION OF TEST INSTRUMENTS
TEST CONSTRUCTION
EFFECTIVE USE OF TESTS
RESEARCH TECHNIQUES AND PROCEDURES
FORMS
A
B
C
D
E
F

FIGURE-1 EDUCATIONAL PSYCHOLOGY ELEMENT THREE DIMENSIONS OF MODULAR STRUCTURE individualization of students' interests, abilities, and previous experiences. The models also are designed to use computer monitors to minimize duplication of subject matter across modules and to alert professional staff to occasions when guidance could be helpful to students. The flow-chart symbols used in each of the three figures have been simplified for illustrative purposes. Note that the two-digit numbers signify element operations and that three-digit numbers signify subelement operations (four-digit numbers are used in modules, cf. Figure 8 below). Further, each of the system models represents an exemplary model, and therefore, the inherent flexibility of each is not fully portrayed.

## The Subelement System Model

Figure 2 represents the subelement system of measurement & evaluation of the educational psychology element. In cutaway form it also illustrates pathways a student may take through the subject matter of human development and learning. Progress through the subelement is described below:

1) Entry 10 indicates the starting point where each student obtains a description of the educational psychology element and a statement of general content objectives.

2) At decision point 120, each student, on the basis of guidance and appraisal data, chooses either to leave the element or to enter one or more subelements.

3) Assuming choice is to enter the measurement subelement, the student progresses through the introductory module prior to selecting one of the several modular options available to him (decision point 150).

4) After entering a module, a student may (a) return to decision point 150 for etnry into another module, (b) complete the chosen module before returning to decision point 150 for entry into another module, (c) proceed to decision point 150 where he may, on the basis of guidance and appraisal, choose to exit the subelement to either another element (exit 99), another educational psychology subelement, or to re-enter the measurement subelement.

## The Modular System Model

Figures 3 and 4 illustrate modular structures. Figure 3 represents Plan A, which offers a separate preassessment at each level. Figure 4 represents Plan B, which offers a comprehensive preassessment that evaluates a student's qualifications for placement in any available level. Progress through each subelement is described below:

FIGURE 2

A MODEL OF THE EDUCATIONAL PSYCHOLOGY ELEMENT

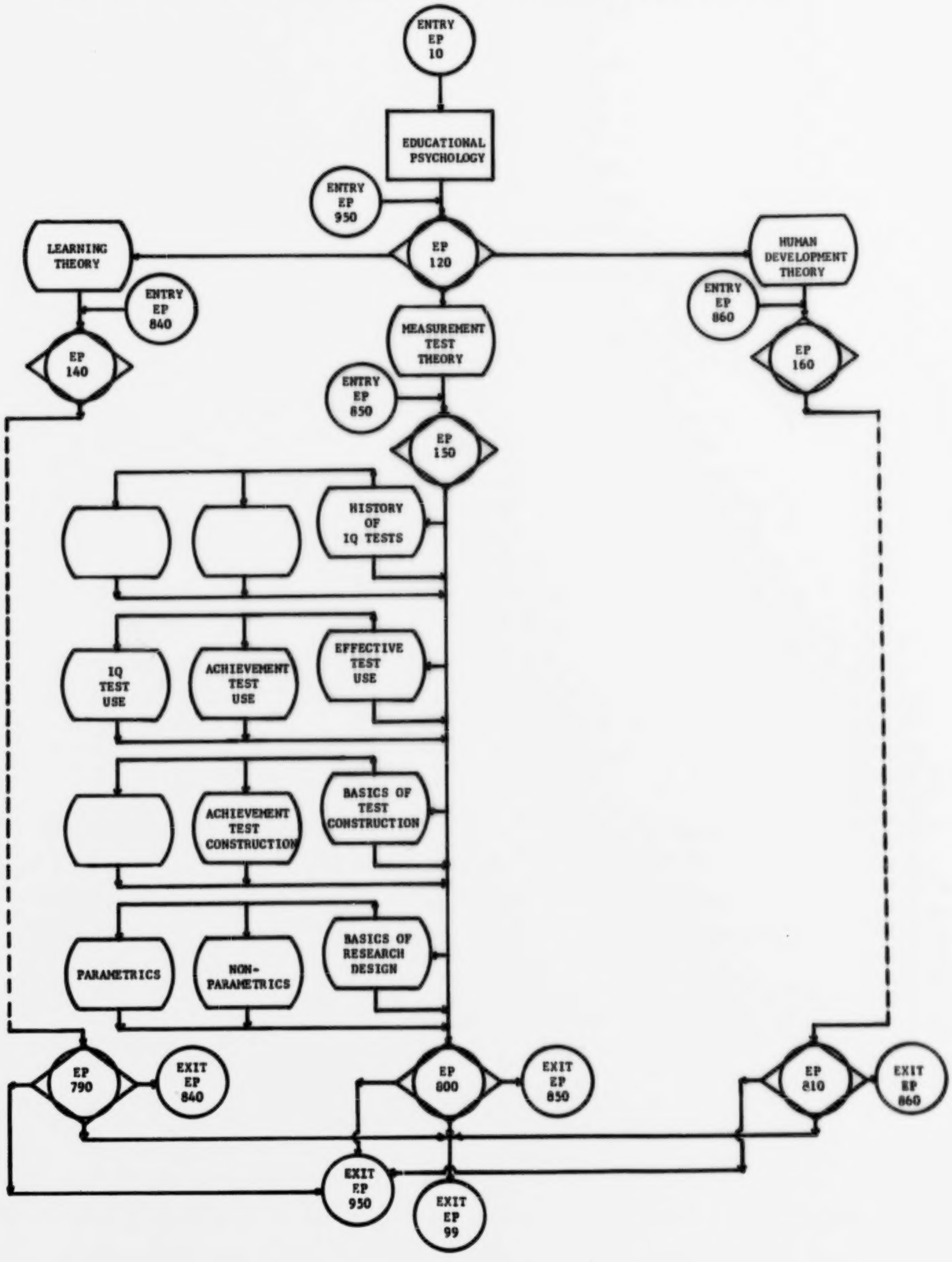

ENTRY EP 10
EDUCATIONAL PSYCHOLOGY
ENTRY EP 950
EP 120
LEARNING THEORY
HUMAN DEVELOPMENT THEORY
ENTRY EP 840
EP 140
MEASUREMENT TEST THEORY
ENTRY EP 860
EP 160
ENTRY EP 850
EP 150
HISTORY OF IQ TESTS
IQ TEST USE
ACHIEVEMENT TEST USE
EFFECTIVE TEST USE
ACHIEVEMENT TEST CONSTRUCTION
BASICS OF TEST CONSTRUCTION
PARAMETRICS
NON-PARAMETRICS
BASICS OF RESEARCH DESIGN
EP 790
EXIT EP 840
EP 800
EXIT EP 850
EP 810
EXIT EP 860
EXIT EP 950
EXIT EP 99

Figure 3: Plan A

1) Entry 1000 indicates the starting point for the module.

2) At decision point 1200, on the basis of appraisal information and previous experience, the student chooses to enter the modular level he believes to be appropriate. At this time he receives a prospectus.

3) At decision point 1500, the student chooses to leave (exit 1000) or to remain and be preassessed by an instrument containing items based on the prerequisites and the content of the module.

4) At decision point 2000, on the basis of preassessment results, the student is shown that: (a) he fails to meet the prerequisites. He then receives a diagnosis of his problem areas and suggestions for supplementary work--exit 1000; (b) he meets the level prerequisites; or (c) he meets the competencies required of the level. He is then routed back to decision point 1200 for entry into either another level or module.

5) Decision point 3000 indicates he may choose among the available units.

6) Upon entering an instructional unit, he may choose either to (a) complete the unit and take the post-assessment procedure, or (b) fail to complete the unit and move directly through the preassessment to decision point 7000.

7) At decision point 7000, (a) if the student has failed to complete the unit, he is provided guidance and leaves the module through exit 1000; (b) if the student fails the post-assessment, he moves to the switch subroutine, which on the basis of appraisal information, post-assessment information, and guidance, may direct him to re-enter the same instructional unit or one of the other units at the same level; (c) if the student passes the post-assessment, he moves directly to decision point 8000.

8) At decision point 8000, he may either (a) move to another modular level (decision point 1200) or (b) move to exit 9999 and leave the module.

Figure 4: Plan B

1) Entry 1000 indicates the starting point for the module Here each student receives a prospectus of the module.

FIGURE-3 PLAN-A

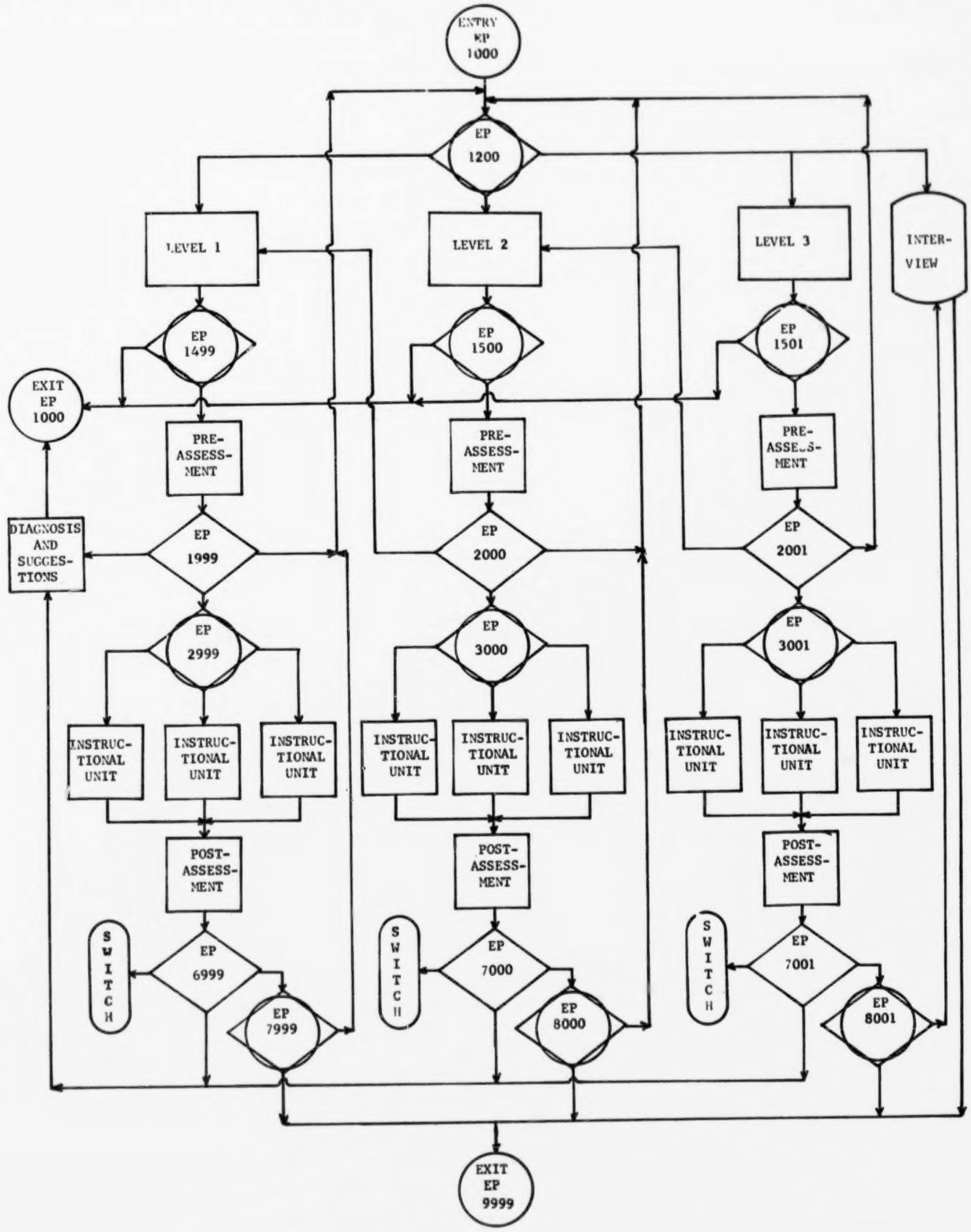
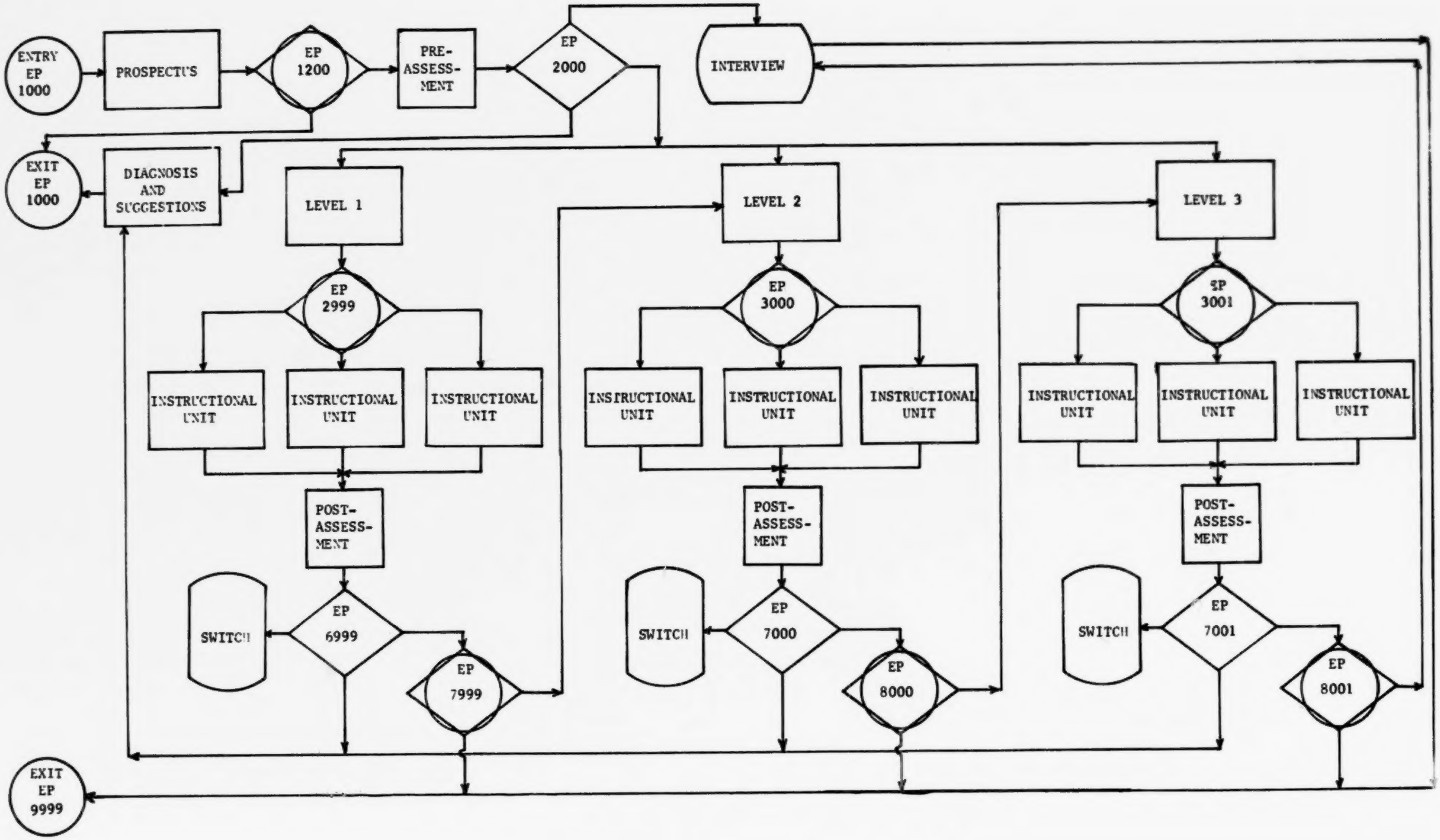

ENTRY EP 1000
EP 1200
LEVEL 1
LEVEL 2
LEVEL 3
INTER-VIEW
EP 1499
EP 1500
EP 1501
EXIT EP 1000
PRE-ASSESS-MENT
PRE-ASSESS-MENT
PRE-ASSESS-MENT
DIAGNOSIS AND SUGGES-TIONS
EP 1999
EP 2000
EP 2001
EP 2999
EP 3000
EP 3001
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
INSTRUC-TIONAL UNIT
POST-ASSESS-MENT
POST-ASSESS-MENT
POST-ASSESS-MENT
SWITCH
EP 6999
EP 7999
SWITCH
EP 7000
EP 8000
SWITCH
EP 7001
EP 8001
EXIT EP 9999

FIGURE-4 PLAN-B


ENTRY EP 1000
PROSPECTUS
EP 1200
PRE-ASSESS-MENT
EP 2000
INTERVIEW
EXIT EP 1000
DIAGNOSIS AND SUGGESTIONS
LEVEL 1
LEVEL 2
LEVEL 3
EP 2999
EP 3000
EP 3001
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
POST-ASSESS-MENT
POST-ASSESS-MENT
POST-ASSESS-MENT
SWITCH
EP 6999
SWITCH
EP 7000
SWITCH
EP 7001
EP 7999
EP 8000
EP 8001
EXIT EP 9999

2) At decision point 1200, the student chooses to (a) leave (exit 1000) or (b) remain, and he is preassessed by an instrument containing items based on the prerequisites and the content of all modular levels.

3) At decision point 2000, on the basis of preassessment results, the student is shown that: (a) he fails to meet the prerequisites, and thus he receives a diagnosis of problem areas and suggestions for supplementary work, and moves to exit 1000; (b) he meets both the introductory module and level 1 prerequisites, and moves to level 1; (c) he meets both the introductory and level 2 prerequisites, and moves to level 2; (d) he meets the introductory, and levels 1, 2, and 3 prerequisites, and moves to level 3; or (e) he has mastered all objectives and moves to an interview with members of the staff for placement in a different module.

4) Assuming the student moves to an appropriate level of difficulty, he enters the teaching-learning instructional unit. Decision point 3000 indicates he may choose among the available units. Upon entering an instructional unit, he may choose either to (a) complete the unit and enter the post-assessment, or (b) fail to complete the unit and move directly to decision point 7000.

5) At decision point 7000, (a) if the student fails to complete the unit, he is provided guidance and leaves the module through exit 1000; (b) if the student fails the post-assessment, he moves to the switch subroutine, which on the basis of appraisal information, post-assessment information, and guidance may direct him to re-enter the same instructional unit or one of the other units at the same level; (c) if the student passes the post-assessment, he moves directly to decision point 8000.

6) At decision point 8000, he may either (a) move to another modular level (decision point 1200), or (b) move to exit 9999 and leave the module.

## MODULAR CONTENT OF SUBELEMENTS

The major areas of educational psychology, which encompass human development, learning, and measurement & evaluation, have remained the organization foci of content for over a half century. The stability of these relatively abstract distinctions is likely to continue, but activity in empirical research is accelerating, and new subject matter is making it increasingly difficult to maintain boundaries among specific areas of study. Research during the decade ahead will sharpen subject-matter distinctions, and the newer, relatively specific boundaries will blur and shift. The modules presented below are illustrative and should not be interpreted as possessing inflexible content. Unanimity among behavioral scientists on the precise divisional structure between modules is probably unattainable, either today or in the near future. However, in order to demonstrate how the educational-psychology element may be implemented in the WETEP program and how the modules may be linked with other modules in the substantive areas and clinical/laboratory activities, the distinctions are assumed to be stable.

## Human Development

The subelement of human development is detailed in Figure 5. The categories which furnish the rationale for the second-level objectives (Table 1, Part 1) are listed at the left. The titles of modules listed in the columns of Figure 5 provide the basis for third-level objectives and criterion behaviors, cf. sample modules below.

The introductory prerequisite is listed in Figure 5, first column, upper left. After successfully completing the introductory module or demonstrating equivalent proficiency, students may elect the other modules concurrently (presumably at a rate of not more than one or two at a time) or in a particularized sequence. As students develop competencies, higher-level modules (column 3) will be constructed for their individualized needs.

The layers identified by letters at the bottom of Figure 5 suggest the different ways in which modules may be developed. Each letter represents a unique confluence of such factors as media, clinical and/or laboratory experiences, age-groupings, and social class differences. A module on cognitive development, for example, might be presented in one or more of the following four patterns:

(1) Cognitive Development: computer programmed, unsupervised observation, preschool, culturally disadvantaged.

(2) Cognitive Development: programmed text, supervised teaching, intermediate, middle class.

(3) Cognitive Development: guided reading, preschool through intermediate, middle class.

(4) Cognitive Development: videotape, guided reading, supervised observation, preschool, all social classes.

## Learning and Measurement & Evaluation

The subelements of learning and measurement & evaluation parallel those of human development and are detailed in Figures 6 and 7. As in the figure for human development, the conceptual framework for the categories, which furnishes the rationale for the second-level

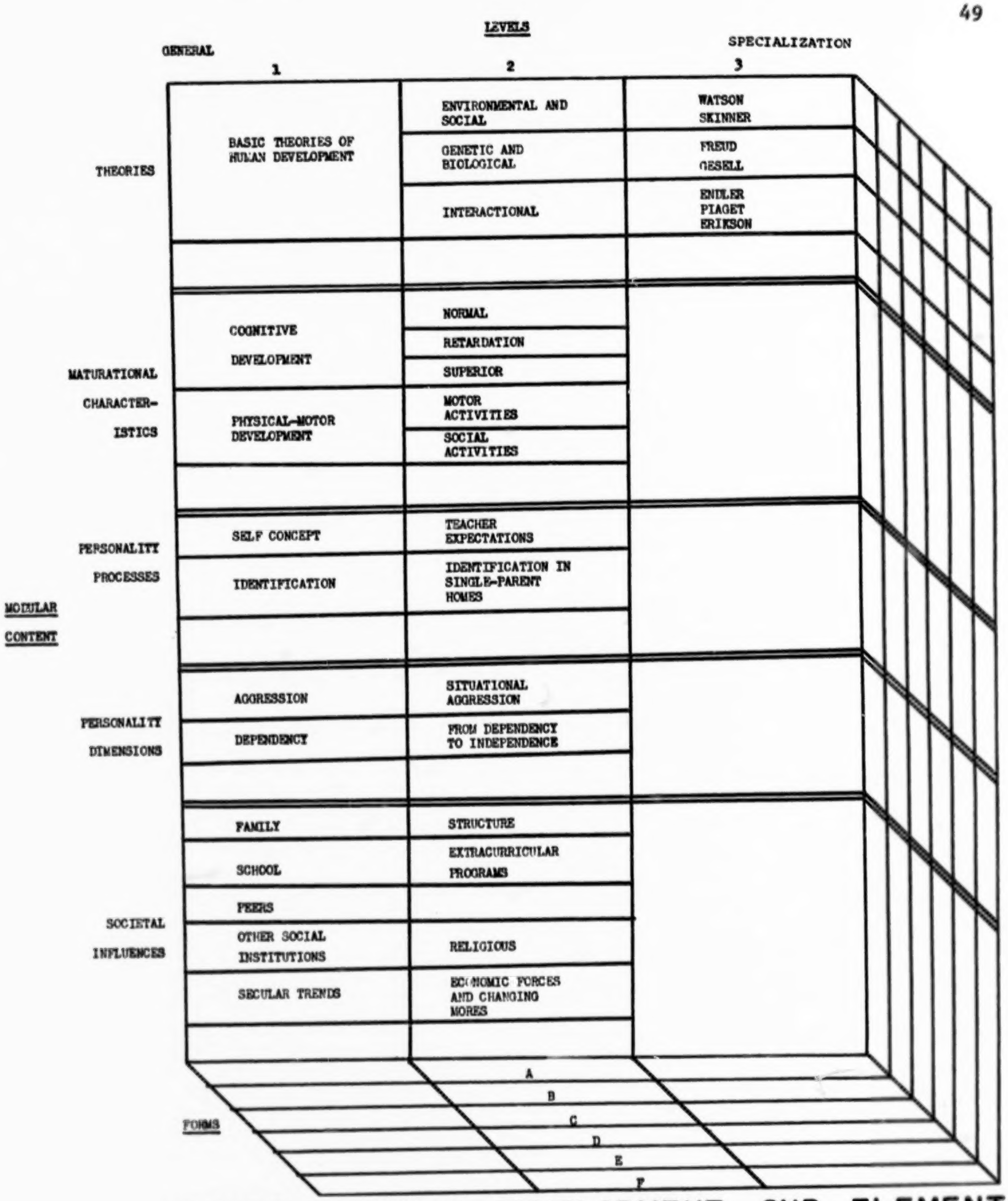

LEVELS
GENERAL
SPECIALIZATION
1
2
3
THEORIES
BASIC THEORIES OF HUMAN DEVELOPMENT
ENVIRONMENTAL AND SOCIAL
WATSON
SKINNER
GENETIC AND BIOLOGICAL
FREUD
GESELL
INTERACTIONAL
ENDLER
PIAGET
ERIKSON
MATURATIONAL CHARACTER-ISTICS
COGNITIVE DEVELOPMENT
NORMAL
RETARDATION
SUPERIOR
PHYSICAL-MOTOR DEVELOPMENT
MOTOR ACTIVITIES
SOCIAL ACTIVITIES
PERSONALITY PROCESSES
SELF CONCEPT
TEACHER EXPECTATIONS
IDENTIFICATION
IDENTIFICATION IN SINGLE-PARENT HOMES
MODULAR CONTENT
PERSONALITY DIMENSIONS
AGGRESSION
SITUATIONAL AGGRESSION
DEPENDENCY
FROM DEPENDENCY TO INDEPENDENCE
SOCIETAL INFLUENCES
FAMILY
STRUCTURE
SCHOOL
EXTRACURRICULAR PROGRAMS
PEERS
OTHER SOCIAL INSTITUTIONS
RELIGIOUS
SECULAR TRENDS
ECONOMIC FORCES AND CHANGING MORES
FORMS
A
B
C
D
E
F

FIGURE-5 HUMAN DEVELOPMENT SUB-ELEMENT THREE DIMENSIONS OF MODULAR STRUCTURE

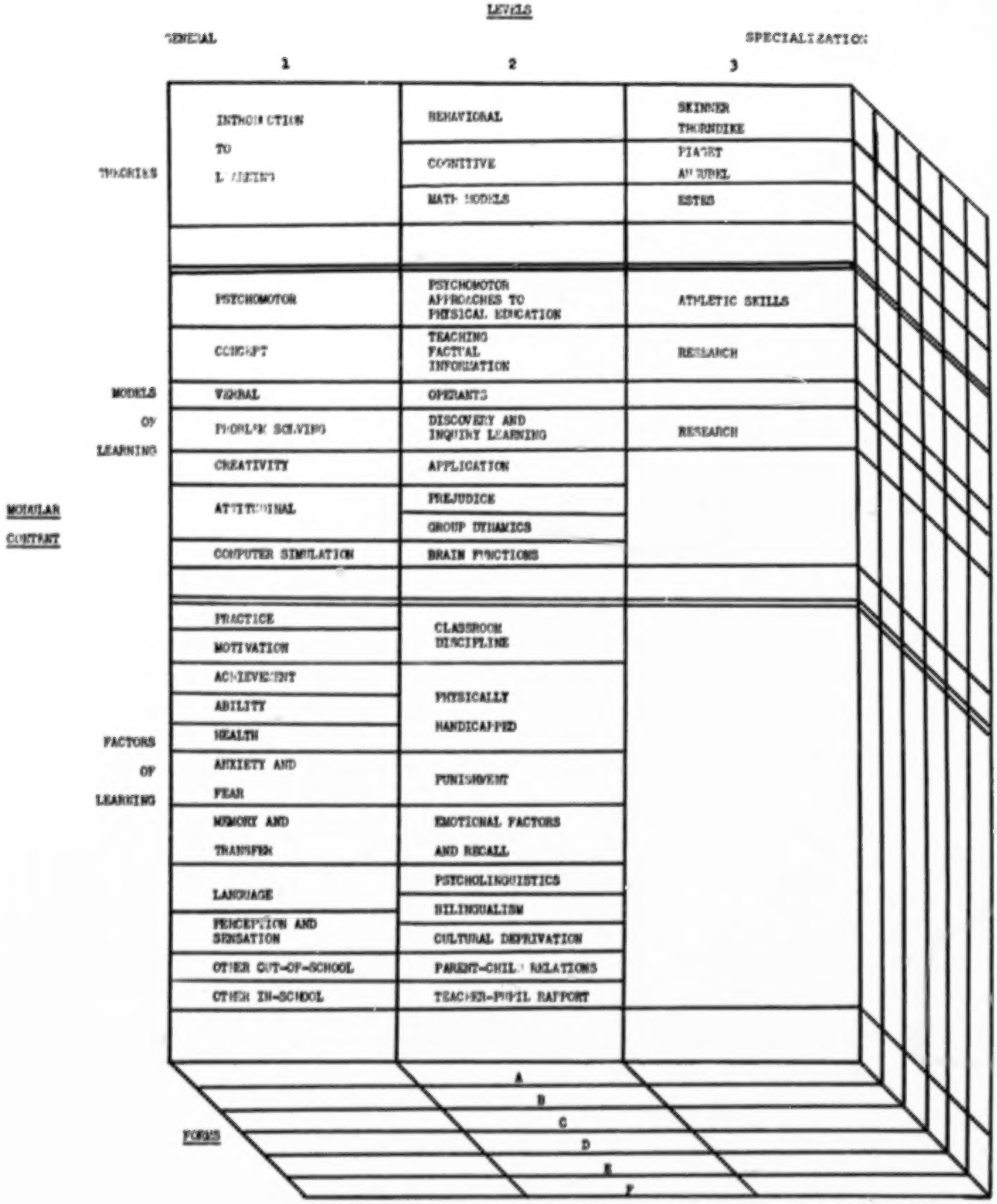

LEVELS
GENERAL
SPECIALIZATION
1
2
3
THEORIES
INTRODUCTION TO LEARNING
BEHAVIORAL
SKINNER
THORNDIKE
COGNITIVE
PIAGET
AUSUBEL
MATH MODELS
ESTES
MODULAR CONTENT
MODELS OF LEARNING
PSYCHOMOTOR
PSYCHOMOTOR APPROACHES TO PHYSICAL EDUCATION
ATHLETIC SKILLS
CONCEPT
TEACHING FACTUAL INFORMATION
RESEARCH
VERBAL
OPERANTS
PROBLEM SOLVING
DISCOVERY AND INQUIRY LEARNING
RESEARCH
CREATIVITY
APPLICATION
ATTITUDINAL
PREJUDICE
GROUP DYNAMICS
COMPUTER SIMULATION
BRAIN FUNCTIONS
FACTORS OF LEARNING
PRACTICE
MOTIVATION
CLASSROOM DISCIPLINE
ACHIEVEMENT
ABILITY
HEALTH
PHYSICALLY HANDICAPPED
ANXIETY AND FEAR
PUNISHMENT
MEMORY AND TRANSFER
EMOTIONAL FACTORS AND RECALL
LANGUAGE
PSYCHOLINGUISTICS
BILINGUALISM
PERCEPTION AND SENSATION
CULTURAL DEPRIVATION
OTHER OUT-OF-SCHOOL
PARENT-CHILD RELATIONS
OTHER IN-SCHOOL
TEACHER-PUPIL RAPPORT
FORMS
A
B
C
D
E
F

FIGURE - 6 LEARNING SUB-ELEMENT
THREE DIMENSIONS OF MODULAR STRUCTURE

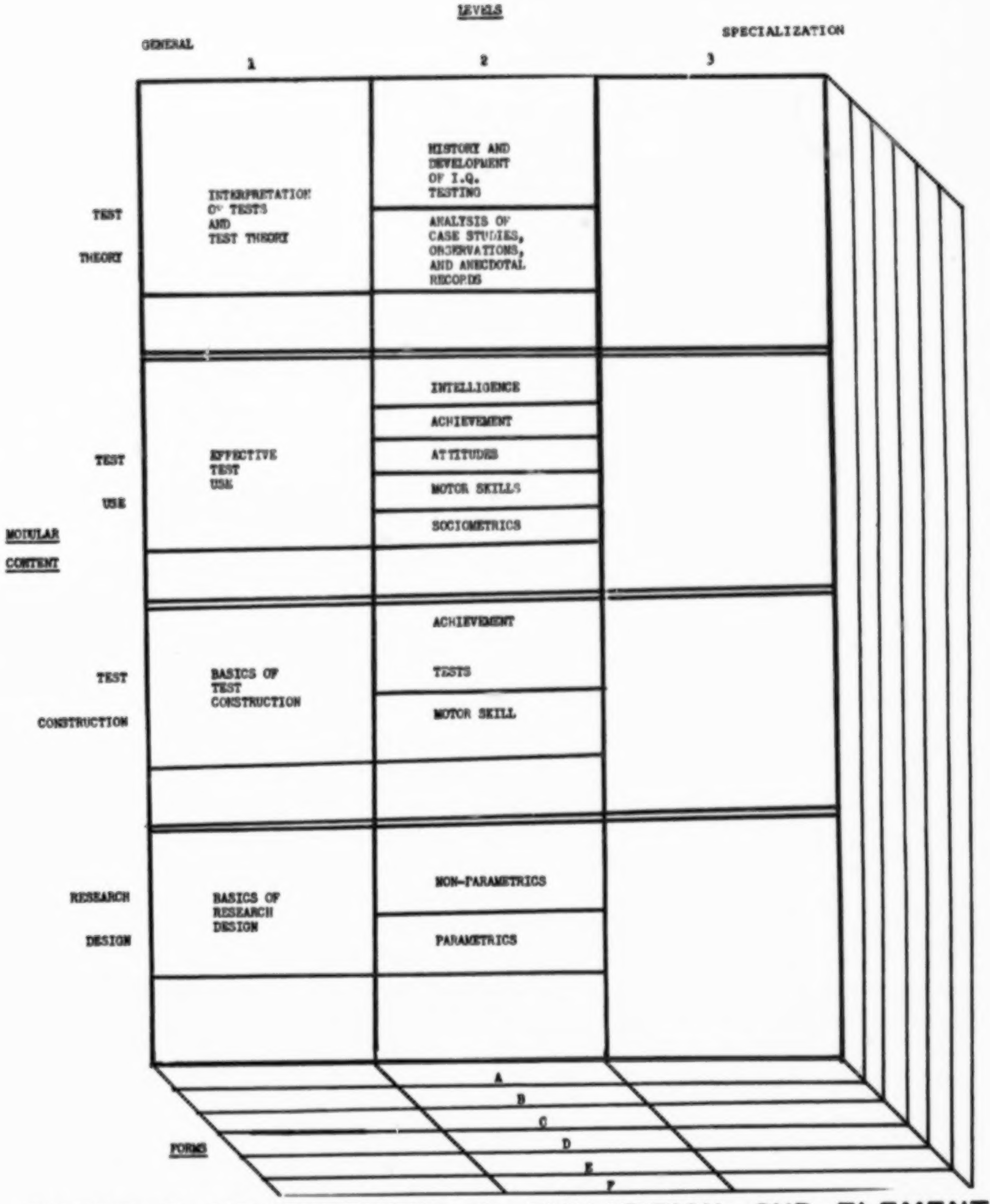

LEVELS
GENERAL
SPECIALIZATION
1
2
3
TEST
THEORY
INTERPRETATION OF TESTS AND TEST THEORY
HISTORY AND DEVELOPMENT OF I.Q. TESTING
ANALYSIS OF CASE STUDIES, OBSERVATIONS, AND ANECDOTAL RECORDS
TEST
USE
EFFECTIVE TEST USE
INTELLIGENCE
ACHIEVEMENT
ATTITUDES
MOTOR SKILLS
SOCIOMETRICS
MODULAR
CONTENT
TEST
CONSTRUCTION
BASICS OF TEST CONSTRUCTION
ACHIEVEMENT
TESTS
MOTOR SKILL
RESEARCH
DESIGN
BASICS OF RESEARCH DESIGN
NON-PARAMETRICS
PARAMETRICS
FORMS
A
B
C
D
E
F

FIGURE-7 MEASUREMENT & EVALUATION SUB-ELEMENT
THREE DIMENSIONS OF MODULAR STRUCTURE

educational-psychology objectives (Table 1, Part 2 for learning and Part 3 for measurement & evaluation) is listed on the left of each figure. The titles of the modules listed in the columns provide the basis of the third-level objectives and criterion behaviors. The introductory prerequisite, serving, respectively, the learning and the measurement & evaluation subelements, is also listed in the first column, upper left, of each figure. Students may elect modules concurrently or in a particularized sequence only after they pass the introductory module or its equivalent. Column 3 modules will be constructed to meet individualized needs.

As in Figure 5, the layers identified by letters at the bottom of Figures 6 and 7 suggest different ways in which modules may be developed.

## EXAMPLES OF MODULAR STRUCTURE

To demonstrate the functions of the three dimensions of modular structure, excerpts from four example modules are shown here (Achievement Test Construction, Discovery Learning, Motor Development, and Motor Activities). The Plan A modular system has been followed throughout. In developing these examples, the following outline, which has proved useful as a preparation guide, also evolved:

I. Prospectus

II. Pretest

III. Instructional unit

    A. Criterion behavior

    B. Content outline

    C. Topical outline for form development

    D. Form development

        1. Title

        2. Relations to criterion behavior

        3. Procedure

IV. Post-test

Each of the terms in the above outline is described briefly below:

Prospectus: A preview of modular content, educational relevance, specific media employed, clinical/laboratory experiences incorporated, prerequisites, expected time of completion, and author(s). Also included is a complete statement of third-level objectives. The prospectus is available to students for purposes of planning study programs.

Preassessment: A qualifying technique that indicates deficiencies requiring supplementary study, adequate preparation for study of the module, or sufficient proficiency to move to a higher modular level. These assessment techniques include personalized interviews between instructors and students, proficiency ratings as indicated by attainment profiles, computerized fixed-choice devices, evaluation of participation in group discussions, and behavioral ratings of laboratory and clinical performances.

Instructional Unit: An organized presentation of content designed to achieve the objectives of the module. The objectives stated in the Prospectus are clearly specified in behavioral terms and identified as criterion behaviors. The criterion behaviors preface the instructional unit and are used as a basis for selecting and organizing the content of the module. The content outline summarizes the material to be covered, while the topical outline for form development specifies the sequence and the time allowance for the presentation of the content. Form development elaborates on the techniques employed in teaching the content. The content is divided into topics, corresponding to the topic outline, and identified by topic title. Each topic is intended to fulfill certain of the criterion behaviors. These are stipulated directly below the title. The procedure describes the activities engaged in by students as they master the content, attain the criterion behavior, and fulfill the objectives.

Post-assessment: A technique that evaluates the degree to which criterion behaviors are realized and indicates either adequate performance or need for supplementary study. These instruments parallel the forms of the preassessment techniques.

Each of these aspects of the outline, which form the preparation guide, are developed in varying degrees in the following four examples. Those aspects that have yet to be prepared are listed in parentheses at their proper position in the module.

## EXAMPLE 1

Element: Educational Psychology
Subelement: Measurement & Evaluation
Module: Achievement Test Construction
Level 2

## Prospectus

Achievement testing is the evaluation of performance against the criteria of behavioral objectives. Depending on the subject-matter, age of student, and specific purpose of the test, you may use an achievement test to identify students' proficiencies or weaknesses, effectiveness of teaching procedures, and need for restructuring of content. Further, the achievement test can be used as an effective evaluation and prognostication device for assessing the total learning situation. In this module you will learn, therefore, how to construct an achievement test.

You may select for study one of three different presentations: (a) video-viewing of lectures, (b) a programmed textbook, or (c) a combination of various media, including film, video tape, audio tape, typewriter, and the CRT. You will use a natural language dialogue computer program as well as tutorial and linear computer programs.

Prerequisites: 1) Interpretation of Tests and Test Theory

2) Basics of Test Construction

Expected Time of Completion: 8½ Hours

Authors: Educational Psychology Staff

Objectives

1. Know seven procedural steps for constructing an achievement test.
2. Comprehend the uses of achievement tests.
3. Comprehend the advantages and limitations of test item types.
4. Apply knowledge of item construction.
5. Apply knowledge of achievement test construction.
6. Analyze the relationship between a given statement of criterion behavior and an observed child's behavior.
7. Evaluate test items.
8. Evaluate an achievement test.

## Preassessment

This device should have two distinct segments--the first to assess students' mastery of the objectives for the prerequisites of the introductory module and the basic module on test construction; the second to assess mastery of the criterion behaviors for the module. Two cut-off points are established; one to indicate which individuals fail to meet the prerequisites, and the second to indicate which individuals have already mastered the objectives of the module and need not take this instructional unit.

The student may choose either computer generated questions or schedule an assessment interview with an instructor.

## Instructional Unit

### Criterion Behaviors

1a. Select from a list of procedural steps those which pertain to the construction of an achievement test.

1b. Place in correct order the procedural steps for constructing an achievement test.

2a. From a list of reasons for grouping pupils, choose those which could be derived from achievement test results.

2b. Give a rationale for changing a school's program of instruction on the basis of achievement test results.

2c. Given erroneous conclusions about a pupil's performance on an achievement test, revise these conclusions to agree with the nature of the test.

2d. Prepare an explanation of why a teacher might change his presentation methods on the basis of achievement test results.

3a. Given a specific criterion behavior, offer a reason for using a fixed choice item.

3b. Provided with a complex criterion behavior, select from a given list of valid test items that which best meets the stated criterion.

3c. Choose the word or phrase which best completes a statement about a non-verbal test item.

4a. Given a specific criterion behavior, present an appropriate fixed response test item.

4b. Given a specific criterion behavior, give an appropriate free response test item.

4c. Present a non-verbal test item which measures a stated criterion behavior.

5a. Assemble randomly presented test items into an effective achievement test.

5b. Construct a table of specifications from given content objectives.

5c. Given an achievement test for a specific age group, prepare suitable directions.

6a. From a series of films portraying a child's behavior, indicate which one best depicts the fulfillment of a stipulated criterion behavior.

6b. From a selection of children's writings, indicate which one best depicts the fulfillment of a stipulated criterion behavior.

7a. Given a list of test items, select those which are designed to test understanding.

7b. Indicate the highest taxological level which a given test item assesses.

7c. Presented with test items which measure a certain criterion behavior, choose the item which has the best stem.

7d. Presented with several test items, choose those which measure the child's application of a specific concept.

8a. Given an achievement test, its purpose, content objectives, table of specifications, and scores of several students, verbally describe the strengths and weaknesses of the instrument.

Content Outline

1. Achievement test construction procedures
    a. Determine test use
    b. Compile subject-matter tied objectives
    c. Construct table of specifications (two-way grid)
    d. Create test items
    e. Assemble test

   - f. Administer test
   - g. Evaluate test
2. Achievement test uses
   - a. Individual assessment
   - b. Group assessment
   - c. Instructional assessment
   - d. Program assessment
3. Table of specifications
   - a. Construct two-way grid: subject-matter tied objectives on one axis, taxological levels on the other axis
   - b. Items determined by cell
4. Test item types--Educational Testing Service
   - a. Fixed response
     - 1) Multiple alternative
     - 2) True-false
     - 3) Variations of the above
   - b. Free response
     - 1) Restricted answer
       - a) Fill-in
       - b) Write a: phrase, sentence, paragraph, chart
     - 2) Unrestricted answer
   - c. Non-verbal
     - 1) Checklist
     - 2) Situational alternative
     - 3) Pantomine
5. Achievement test evaluation
   - a. Validity
     - 1) Content
     - 2) Construct
     - 3) Concurrent
   - b. Item analysis
     - 1) Difficulty
     - 2) Discriminating power

Topical Outline for Form Development

Topic I. Purposes of achievement testing--one hour

1. Individual assessment: definition and examples
2. Instructional effectiveness: definition and examples
3. Group assessment: definition and examples
4. Program effectiveness: definition and examples

Topic II. Observation of behavioral outcomes--one-half hour

1. Criterion objectives: presentation
2. Student behavior related to criterion behavior

Topic III. Subject-matter-related behavioral objectives--one hour

1. Test construction procedure: explanation
2. Behavioral objectives: obtained from the substantive programs of WETEP elements

Topic IV. Test plan construction--one hour

1. Outline of subject-matter objectives: preparation
2. Table of specifications: construction and uses

Topic V. Item type information--one-half hour

1. Test item types: explanation
2. Test item types: demonstration of appropriate use

Topic VI. Fixed choice, free response, and non-verbal items--two hours

1. Fixed choice items: construction
    a. Examples at taxological levels
    b. Preparation of stems
    c. Preparation of distractors

2. Free response items: construction
    a. Examples at taxological levels
    b. Preparation of questions

3. Non-verbal items: construction
    a. Examples at taxological levels
    b. Preparation of situations
    c. Preparation of checklists

Topic VII. Test Assembly--one hour

1. Time allotment: explanation

2. Items: interrogation

3. Item arrangement: explanation and examples

4. Arrange items (Student's instrument)

5. Directions and sample questions: explanation and examples

6. Write directions and sample questions

Topic VIII. Test administration and scoring--one-half hour

1. Administration and scoring: explanation

2. Administer the test

3. Score the test

4. Record the results

Topic IX. Test evaluation--one and one-half hours

1. Item analysis: explained and demonstrated

2. Item analysis performed

3. Item analysis interpretation: explained

4. Item analysis interpreted

5. Validity: explained and demonstrated

6. Validity checks performed

Form Development

Topic I: Purposes of achievement testing (See Figure 8)

Related criterion behaviors: 2a, 2b, 2c, 2d

Procedure: The student may spend one hour in a study carrel with a computer-linked typewriter, tape deck, and dial-access television receiver. He begins by identifying himself (Entry 2000) and typing a program request number. The tape deck identifies the program and begins the first instructional activity by giving an example of how an achievement test may be used, such as,

> An achievement test may be used to determine the effectiveness of a given presentation. Representative examples may be obtained through the dial access system. Select and dial your video presentation(s).

The student chooses (decision point 2100) to see one or more five- to eight-minute video presentation(s). He may choose any specific age level and/or subject-matter area available. After he views the presentation(s), at decision point 2700, he either returns to decision point 2100 for additional presentations or types "GO" to continue. The typewriter presents a multiple choice item about each presentation he has seen, such as,

> The teacher used the test to . . .
>
> A) check student progress.
> B) regroup the students.
> C) check his effectiveness.
> D) compare the students to one another.

After indicating his answer, the student receives a comment corresponding to his reply; for example, if he has responded incorrectly he might be informed:

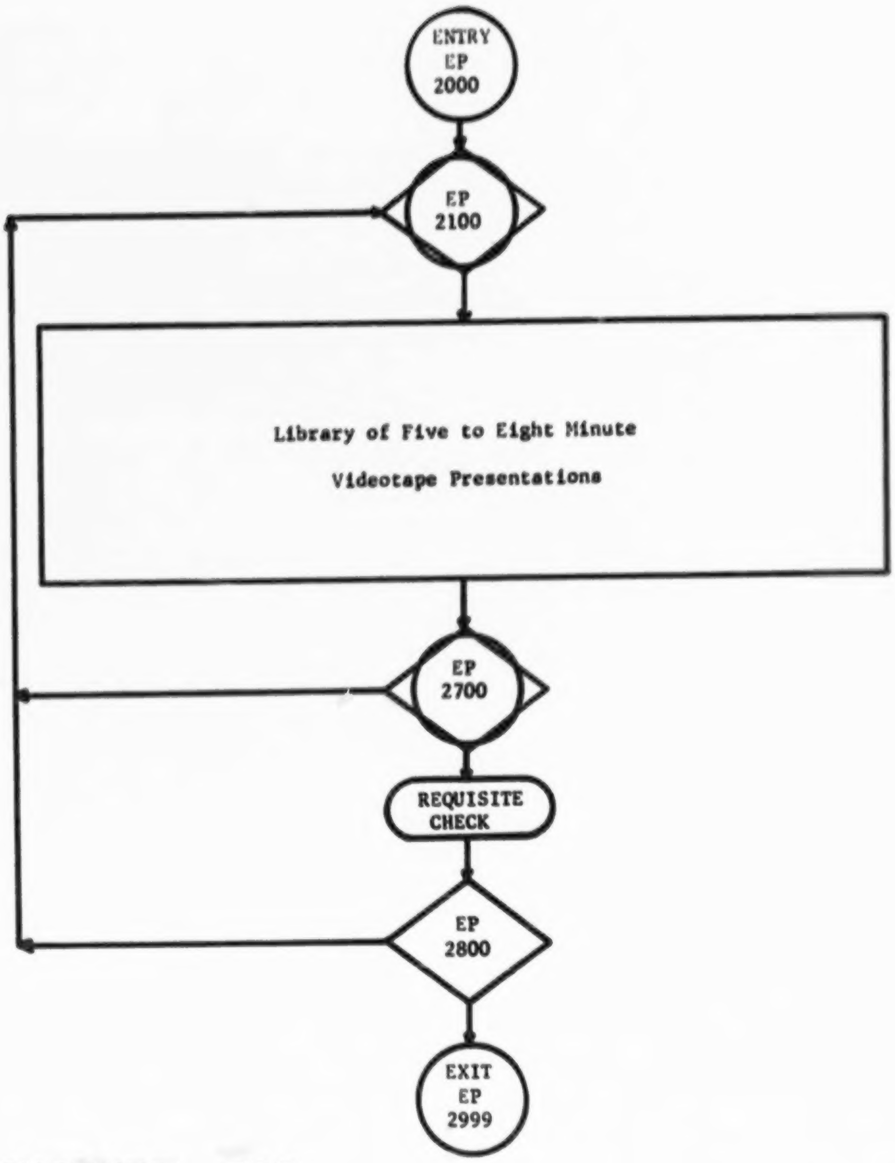

ENTRY
EP
2000
EP
2100
Library of Five to Eight Minute
Videotape Presentations
EP
2700
REQUISITE
CHECK
EP
2800
EXIT
EP
2999

FIGURE 8

AN INNER-FORM STRUCTURE FOR

TOPIC-1 PURPOSES OF ACHIEVEMENT TESTING

> You have indicated that the teacher checked student progress. That was not the test use you were watching. [A tactful admonition and clarification will follow.]

Until he makes several successful analyses of examples, the student continues viewing filmed examples (decision point 2800) showing the use of achievement tests to assess: a) individual children, b) groups of children, c) effectiveness of presentation, d) changes in educational environments. Then, the student views a slide that tells him he may go on to topic II (exit 2999).

Topic II: Observation of behavioral outcomes

Related criterion behaviors: 6a, 6b.

Procedure: The student spends one-half hour in a study carrel with a computer-tied CRT. He begins by identifying himself and then submits a program request number specifying the age level in which he is interested. He is presented with a slide containing a statement of criterion behavior, such as,

> The child should be able to place the five largest countries of the world in their correct hemisphere.

After erasing the screen, the student then views a one-minute film clip, such as,

> A child sorts cards containing the pictures and names of the five largest countries by hemispheres. He places one country in the wrong hemisphere.

The student decides whether the behavior adequately fulfills the objective and indicates his decision. If he is correct, the CRT presents a slide which says,

> You are correct; continue.

If he is incorrect, the CRT presents a slide which says,

> The criterion behavior stipulated that the child was to place the five largest countries in their correct hemisphere. Since the child misplaced one, he did not fulfill the criterion behavior.

The CRT continues to present examples of either children's overt behavior or examples of children's written work. The next slide showing criterion behavior might be:

> The child should be able to explain the mathematical rationale for the division algorithm.

The next slide shows a child's paper on which he had solved a division problem based on rational numbers. The student decides if the behavior adequately fulfills the objective and indicates his decision. If the student is correct, the CRT presents,

> Well done, you are correct. Continue.

If the student is incorrect, the CRT replies with:

> A student who can solve a division problem with rational numbers may or may not be able to explain the process he used to obtain his answer. He has not fulfilled the criterion objective.

The student continues until he is correct five times in succession. He is then presented with a slide telling him that he has successfully completed work on this topic and may continue with the next topic.

Topic III: Subject-matter-related behavioral objectives

Related criterion behaviors: 1a, 1b.

Procedure: The time the student spends obtaining a list of behavioral objectives will vary with the subject-matter field he selects. He is in a study carrel with a computer-linked CRT, speaker, line printer, light pen, and optical scanner. He begins by identifying himself and then places a program request number in the optical scanner. The CRT and speaker give an eight-minute presentation of a seven-step procedure for test construction: 1) define test use, 2) compile subject-matter-related behavioral objectives, 3) construct table of specifications, 4) create test items, 5) assemble the test, 6) administer the test, and 7) evaluate the test. Each of the seven procedural steps is defined and the student is shown that he is now ready to compile subject-matter objectives. The computer memory system indicates the subject-matter fields with which he is familiar, and he uses the light pen to indicate his choice.

Assuming the student chooses the mathematics area, he uses the light pen to select the strand of the mathematics field (_i.e._, geometry, set theory, problem solving) he wishes. He also indicates the achievement level of the children he wants to test. He then works with a segment of a program in the mathematics element, subelement C (Elementary School Mathematics Programs), where he compiles behavioral objectives.

Assuming the student chooses the "geometry strand," the CRT presents a slide on which are printed geometric concepts such as,

1) A ray has one fixed endpoint.
2) A line extends to infinity in both directions.
3) A line is an infinitely large set of adjacent points.
4) A line segment has two fixed endpoints.

Keeping in mind the achievement ability he has chosen, the student is asked to develop behavioral objectives for the concepts. Each objective he develops is evaluated.

When the student has written three acceptable behavioral objectives on each concept, a slide informs him that he may continue to Topic IV where he will construct a test plan.

(Topic IV)*

(Topic V)

(Topic VI)

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*Sections marked by parentheses have not been completed.

(Topic VII)

(Topic VIII)

(Topic IX)

## Post-assessment

The post-assessment contains a battery of quickly answered items. The test will be computer administered, and students who equal or surpass an arbitrary cut-off score are passed. Students who score below the cut-off move to the switch subroutine for further instructions.

## EXAMPLE 2

Element: Educational Psychology
Subelement: Learning
Module: General Introduction to Discovery Learning
Level 1
Preschool through Intermediate

## Prospectus

The discovery approach to learning ranges from trial-and-error, random behavior on the part of the learner to controlled, guided, or directed behavior. In this module you will learn about historical and contemporary interpretations of discovery learning and study practical examples demonstrating effective and ineffective application of this approach. Depending upon the subject-matter, age of student, and his previous experience, the discovery method may be used as an effective motivational technique in the teaching-learning process. You will study the subject matter from conventional textbooks and journals, a video tutorial program, videotapes, 8mm films, and observation manuals with guide questions. You will have opportunity to evaluate the use of discovery methods in classroom situations and to participate in a discovery - learning teaching experience.

Prerequisites: Introductory Module on Learning Theory, Level I

Lesson Planning Procedures

Expected Time of Completion: 8 Hours

Authors: Educational Psychology Staff

Objectives

1. Know philosophical antecedents.
2. Know psychological antecedents.
3. Know contemporary approaches.
4. Comprehend relations between antecedent and contemporary views.
5. Comprehend rationale for employing methods under given teaching conditions.
6. Identify discovery methods while observing learning situations.
7. Design effective lesson plans in specific content areas using discovery methods.
8. Implement a lesson plan in a specific content area by employing short-term learning criteria.

## Preassessment

This device consists of two sections. The first covers the basic concepts of the two prerequisite modules--Introductory Learning Theory and Lesson Planning Procedures. The evaluation data may be obtained from attainment profiles, personal interviews, or group discussion. Successful completion of this section enables the student to proceed with the module.

Section two of the preassessment is a multiple choice test covering the basic concepts of the Discovery Learning module itself. Successful completion of this section qualifies the student for modular credit and enables him to bypass the module.

## Instructional Unit

### Criterion Behaviors

1a. From a list of 18th Century philosophers, indicate which of them have influenced psychologists in discovery learning.

1b. Given a lesson plan in a substantive area, indicate which of several early philosophers would endorse it.

2a. Identify from a selection of learning characteristics those that best describe a psychological interpretation of the discovery approach.

2b. From a list of psychological principles, indicate those that are relevant to the discovery learning approach.

3a. Given a list of discovery learning characteristics, select those that describe the approach of a given contemporary psychologist.

3b. From a description of two discovery learning approaches, indicate differences in teacher supervision techniques.

4a. Given a film presentation of a learning situation and a list of psychologists, identify those psychologists whose theories directly relate to the filmed example.

4b. Given a film presentation of a learning situation and a list of characteristics of the progressive education movement, indicate which of the latter are depicted in the filmed example.

4c. Given the names of an 18th century and a contemporary psychologist and a list of discovery learning views, indicate those views that are common to both men.

5a. Given a written description of a concept to be taught, the pupil's age, and the amount of class time, select from three discovery learning approaches the one which would be most appropriate.

5b. Given a filmed presentation of the ineffective use of a discovery learning approach, choose from a list of situational factors those that contribute to the ineffectiveness of the approach.

5c. Given a brief description of two students of the same age, equal ability, and similar background, indicate additional factors to be considered in the use of the discovery learning approach.

6a. After observing a micro-teaching situation, specify the extent to which the discovery learning approach was used.

6b. Given a pair of lesson plans on specific content, indicate the differences between the discovery learning approach used in each.

6c. From a list of learning situations and a list of discovery learning approaches, indicate the approach that most effectively fulfills the objectives of the learning situation.

7a. Given an expository lesson plan in any substantive area, redesign it to effectively employ a discovery learning approach.

7b. Presented with a complete description of a learning situation, prepare an appropriate lesson plan employing the use of a discovery learning approach.

7c. Given a lesson plan based on the discovery learning approach and a specific situation, suggest changes maximizing the effectiveness in the main plan.

8a. Select a micro-teaching situation and implement a given discovery learning lesson plan.

Content Outline

1. Philosophical interpretations of discovery learning
    a. Aristotelian logic--deductive and inductive reasoning
    b. Post-Renaissance formalism
    c. Progressive education--John Dewey
    d. Non-directive and child-centered approaches--J. J. Rousseau
    e. Montessori approach

2. Psychological interpretations
    a. Association learning--Hull, Skinner
    b. Connectionistic-field theory
    c. Information process--Simon
    d. Cognitive learning--Ausubel
3. Contemporary approaches to discovery learning
    a. Theorist no. 1
    b. Theorist no. 2
    c. Theorist no. 3
4. Relations between antecedent and contemporary views
    a. Early progressive education movement and Bruner's present position
    b. Associationism and Kagan's present position
5. Dimensions for current studies and hypotheses
    a. Theory of approach
    b. Educational objectives
    c. Methodological rigor
    d. Age of learners
    e. Variety of treatments
    f. Labels for treatments
    g. Measures of dependent variables
6. Rationale for employing various discovery approaches under given teaching conditions
    a. Situational factors
        1) Availability of materials and equipment
        2) Availability and flexibility of time
        3) Content--material in question
        4) Significance of making errors

b. Student-related factors

1) Interest in content area
2) Previous experience with the discovery method
3) Attitude toward independent exploration

c. Teacher-related factors

1) Ability to excite enthusiasm for using the discovery approach
2) Ability to manage students working at different rates of speed
3) Ability to identify to what extent guidance and assistance is beneficial to each student

7. Strengths and weaknesses of the use of discovery learning

a. Strengths

1) Useful for teaching the scientific method--developing skills in hypothesis making and testing
2) Increases meaningfulness of materials presented in expository fashion
3) Useful for assessing the meaningfulness of knowledge
4) Evaluates learning
5) Useful for appraising the teaching of problem-solving techniques
6) Creates arousal and maximal attention
7) Activities become valuable to the degree that effort is expended in mastery--hence, involvement
8) Increases expectation of solving problems autonomously
9) Alleviates passive dependency by providing more freedom for activity

b. Weaknesses

1) Expensive and time consuming for all involved
2) Unwarranted reliance on concrete experience
3) Minimizes importance of abstract cognitive functions
4) Throws learner on his own resources--many cannot cope with the ambiguity
5) Children may not have initial motivation to make necessary inferences
6) Young children may not fully appreciate either the problem or its solution--their initiative to discovery may be low and irrelevant information may intrude
7) Impulsive children may settle on wrong answers

(Topical Outline for Form Development)

Form Development

(Topic I)

(Topic II)

(Topic III)

(Topic IV)

Topic V. Comprehend rationale for employing discovery methods under a given teaching condition

Related criterion behaviors: 5a, 5b, 5c

Procedure: The student selects a film and the accompanying handbook for this topic, according to the age group and subject area in which he is interested. With these materials he enters a study room equipped with dial access and views the film a section at a time while simultaneously completing the accompanying handbook.

The film begins with the following statement:

> The use of the discovery learning approach depends upon the following factors: age and experience of pupils, content being taught, class time allowance, availability of materials, teacher's background and abilities. View the first two classroom scenes and observe how these factors influence the use of the discovery learning approach employed in each.

Following the presentation of excerpts from two classroom instructions, an instructor on the film discusses the influences of the above-mentioned factors and suggests that the student follow the evaluation found in outline form on page one of the handbook.

In part two of the film, the instructor presents a detailed description of a learning situation, discussing factors that are situational, teacher-related, and pupil-related. The student is then asked to review a lesson plan provided in the handbook and to note which factors have been adequately considered in the preparation of the plan. After reviewing the lesson plan, he continues with the film and receives from the instructor a complete evaluation of the same lesson plan, according to the factors originally discussed.

In part three of the film, the student is presented with a ten-minute demonstration of a science lesson. Assuming he has selected a film for ages 8 - 10, some of the scenes from a lesson on "Sound and the Length of a Vibrating Body" might be:

1) Two students are diligently working at a table comparing the sound produced from several stick pins placed in a piece of balsa wood at varying depths.

2) A group of students are plucking a rubber band stretched around three pegs on a peg board--one of the group is using a spare rubber band in order to "snap" classmates.

3) The teacher, through a series of questions, encourages a disinterested student and finally succeeds in provoking his interest and involvement. The same student is later seen working intently with a small group.

4) In the closing scene, the teacher, admitting he had lost track of time, has the students stop their activity very abruptly so they will be prepared for the art teacher who is to arrive in a minute.

(Several other scenes exemplifying the effectiveness or ineffectiveness of the approach would be presented.)

After viewing this ten-minute portion of the science class, the student is instructed to work pages 2 through 4 of the handbook.

Page 2 contains a list of general factors influencing the use of the discovery learning approach. The student is instructed to indicate with a check mark those factors which were properly handled in the film presentation.

Page 3 reviews two obviously ineffective aspects of the approach such as the teacher's abrupt termination of the class period and the pupil's misuse of the rubber band. The student is then asked to suggest possible preventive measures or alternative ways of handling the undesirable situations.

Page 4 reviews the activities of a given child. A list of evaluative judgments are then stated regarding the discovery approach, and the student is asked to indicate which statements are valid.

The student is free to replay the film or any part of it while completing the handbook. The last part of the film provides him with answers and a discussion for a self-checking. If the student believes he has been successful in completing the topic, he is encouraged to proceed to the next modular topic. If the student is dissatisfied with his performance, he may obtain another film and handbook and repeat the topic until he feels that he comprehends the rationale for employing discovery learning techniques under given teaching conditions.

(Topic VI)

(Topic VII)

## Post-assessment

Satisfactory fulfillment of criterion behavior 8a, which involves microteaching and is evaluated by behavioral ratings, serves as the post-assessment for the module.

## EXAMPLE 3

Element: Educational Psychology
Subelement: Human Development
Module: Motor Development
Level 1
Infancy through Middle Childhood

## Prospectus

The subject matter of this module includes a discussion of general characteristics and patterns of motor development, guidance of children in facilitating motor development, and relations of motor development to other aspects of human development. Issues, such as "continuity and discontinuity of growth," "variability in rates of development," "critical periods," and "differences in stages and terminals" are discussed in relation to general characteristics of motor development. Evidence is presented to illustrate such patterns as "maximum to minimum muscle involvement in motor acts," and to show how knowledge of (a) equipment, (b) experiences and instruction, and (c) adult attitudes influences ways in which children are guided toward maximal motor development. Finally, motor development is related to cognitive and social development.

You will study motor development through reading assignments, video tapes of lectures, films of children's motor behaviors, and a programmed text.

Prerequisites: Basic Theories of Human Development

Expected Time of Completion: 7½ Hours

Authors: Educational Psychology Staff

Objectives

1. Know general characteristics of motor development.
2. Comprehend patterns of motor development.
3. Comprehend relationship of motor development to cognitive development and social development.
4. Comprehend general effects of equipment, experiences and instruction, and role of adult attitudes.

## (Preassessment)

## Instructional Unit

Criterion Behaviors

1a. From a list of general characteristics of motor development and examples of children's motor behaviors, match the examples with the characteristics which they illustrate.

2a. Select from examples of children's motor behaviors those which are examples of reflexive control.

2b. Name the appropriate pattern of motor development being demonstrated in a series of slides.

3a. Given examples of particular motor behaviors, write predictions of the resulting effect on cognitive behavior.

3b. Write reasons why highly developed motor skills may affect social behaviors of a school-age child.

4a. From filmed episodes of playground activities indicate those where supply of equipment is adequate.

4b. Write an explanation of how teacher attitudes of over-protectiveness affect children's motor activities.

4c. From a statement of why preschool children should be given instruction in motor skills, indicate which parts of the statement are inconsistent with developmental characteristics.

(Content Outline)

(Topical Outline for Form Development)

(Form Development)

(Post-assessment)

## EXAMPLE 4

Element: Educational Psychology
Subelement: Human Development
Module: Motor Activities Related to Maturational Characteristics
Level 2
Infancy through Middle Childhood

### Prospectus

The module is designed to provide specific data on motor skill sequences and the standards of development or achievement of motor skills. Within the module, there are choices of age level to be studied, i.e., infancy, preschool, primary, etc. Motor behaviors are described and illustrated in detail to emphasize (1) sequential developments and (2) individual variations in rate and pattern such as accelerated development or deviations in sequence. Identification of stage of development in relation to each type of motor skill is emphasized, as is evaluation of general motor development. Activities to promote acquisition of new skills, such as skipping, and refinement of established skills, like balancing, are suggested for each age level.

The information is presented by use of video tapes and slides. Observation is included to give practice in evaluation.

Prerequisites: Introductory Module in Motor Development, Level I

Expected Time of Completion: 5 Hours

Authors: Educational Psychology Staff

Objectives

1. Know normative data for motor behaviors within the selected age level.

2. Know the pattern or sequence of motor behaviors in the acquisition or refinement of skills.

3. Comprehend the significance of individual's rates and patterns of development in relation to normative data.

4. Identify level of performance in specific motor tasks.

5. Evaluate motor behaviors in relation to qualities of general motor development.

6. Know appropriate activities for each type of motor behavior in relation to the child's performance level.

(Preassessment)

Instructional Unit

Criterion Behaviors

1a. Given specific skills, state probable age of (1) emergence of the skill, (2) attainment of the skill, and (3) refinement of the skill.

2a. From a list of descriptions of motor behaviors, order the items in proper sequence.

3a. Write an interpretation of the pattern and rate of an individual's development in relation to a specific task from filmed sequences of the particular behavior.

4a. From filmed episodes of children's motor behaviors in specific tasks, identify the level of performance.

5a. From observation of a group of children, specify the quality of general motor ability on a five-point scale for each child.

6a. Given descriptions of performance in specific types of motor behaviors, list activities to stimulate or improve performance.

(Content Outline)

(Topical Outline for Form Development)

(Form Development)

(Post-assessment)

# COMMUNICATIONS

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## COMMUNICATIONS

Abstract. The Communications Element of WETEP relates to language in the general sense as the vehicle by which one communicates, whether by writing, speaking, gesturing, dramatizing, composing messages, interpreting the messages of others, by reading, listening, or by use of modern media. It recognizes that the ultimate goal of communication is to maximize the child's interactions with other people, and to permit him to have access to the values and thinking of the people of the world.

The Communications Element is designed to develop in pre-service and in-service teachers an understanding of the competence and performance needed to help children express themselves and to receive and interpret the intellectual, emotional, and social expressions of others. With communication as the central focus, the programs proposed in other WETEP Elements contribute to the development of the teacher's philosophy and competence in many areas. This Element integrates and synthesizes numerous competencies, personal and professional, that contribute to a student's becoming a successful teacher of various communicating processes.

There are five major characteristics of the Communications teacher: The WETEP teacher:

- demonstrates personal communication competencies
- knows the theoretical structures and physiological-psychological-sociological factors which influence the communication processes of elementary pupils
- knows developmental programs in communication
- assesses each pupil's levels, needs, and competencies in each process of communication and can prescribe individualized profiles of desirable communication outcomes
- establishes the environment for pupil communication in a variety of socio-cultural settings

Major emphasis in the program will be on expression. Communication performance, particularly the productive communication of children and adults and the social and psychological forces which affect them, will be the prime model for the curriculum. A language learning environment will be technologically perfected and programmed in such a way as to facilitate free exploration and discovery of interrelationships among the communicating processes.

The Communications Element is composed of four subelements: Theoretical Structures, Developmental Programs, Assessment and Diagnosis, and Environment. Progress through these subelements is described in modules for which objectives have been written in both the cognitive and affective domains. One detailed implementation example of an instructional unit within Module 1, the use of standardized reading tests, has been described.

# INTRODUCTION

The Communications Element of WETEP is designed to develop in pre-service and in-service teachers an understanding of the competence and performance needed to help children express themsevles and receive and interpret the intellectual, emotional, and social expressions of others. Ammons has defined communication as ". . . a two way process in which one individual intends that a particular meaning be grasped by another or others and in which others grasp the intended meaning."[1] In attempting to interrelate a number of central content areas related to this focus for communication, the authors have incorporated those areas in teacher education more commonly grouped under English education, the language arts, and some of the performing arts (e.g. mime, improvisation, drama).

The Communications Element is closely integrated with other major elements in WETEP. With communication as the central focus, the programs proposed in other elements contribute to the development of the teacher's philosophy and competence in many areas. For example, knowledge of body movement as defined in the Physical Education Element contributes to an understanding of the part the body plays in communication. Knowledge of learning strategies employed generally as taught in the Educational Psychology Element contributes significantly to the understanding of the process used by the child in acquiring language. Knowledge of curriculum development as specified in the Curriculum and Instruction Element contributes significantly to the special instances of programs and environmental settings peculiar to increasing a child's opportunities to express himself as specified in this element.

In developing this element, the integration and synthesis of the numerous competencies, both personal and professional, that would contribute to a student's becoming a successful teacher of various communicating processes was attempted. Attention has been given to culling from the accumulated wisdom of various scholars, the staff at the University of Wisconsin, the National Council of Teachers of English, the International Reading Association, and other organizations the current and most generalizable skills and knowledge needed by a teacher in this area in the years ahead.

The statements in the Communications Element, although more broadly defined, are consistent with the recommendations of the "English Teacher Preparation Study." Their recommendations are summarized below.[2]

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[1] Ammons, Margaret, "Communication: A Curriculum Focus." A WETEP Position Paper, Volume I. The Wisconsin Elementary Teacher Education Project Report.

[2] Viall, William P., Evertts, Eldonna L., and Shugrue, Michael F. "English Teacher Preparation Study: Guidelines for the Preparation of Teachers of English, 1967." English Journal 56(6): 884-895; September, 1967. Also in Elementary English 44(6), October, 1967; College English 29(1); October 1967; and PMLA 32(5); October, 1967.

I. The teacher of English at any level should have personal qualities which will contribute to his success as a classroom teacher and should have a broad background in the liberal arts and sciences.

II. A. The program in English for the elementary school teacher should provide a balanced study of language, literature, and composition above the level of freshman English. In addition, the program should require supervised teaching and English or language arts methods, including the teaching of reading, and it should provide for a fifth year of study.

B. The teacher of English at any level should consider growth in his profession as a continuing process.

III. The teacher of English at any level should have an understanding and appreciation of a wide body of literature.

IV. The teacher of English at any level should have skill in listening speaking, reading, and writing, and an understanding of the nature of language and of rhetoric.

V. The teacher of English at any level should have an understanding of the relationship of child and adolescent development to the teaching of English.

VI. The teacher of English at any level should have studied methods of teaching English and have had supervised teaching.

These guides, hammered out in many meetings over several years, were sponsored by the National Association of State Directors of Teacher Education and Certification, the National Council of Teachers of English, the Modern Language Association, and Western Michigan University. As a product of a committee and of suggestions from relevant professionals, they tend to be repetitious and at times even conflicting. But as a product of consensus, they are considered the best current sketch of what the English teacher ought to be. They carry the authority of majority opinion rather than the weight of a reasonably argued position for better prepared English teachers.

## Characteristics of the WETEP Communications Teacher

The specific personal and professional competencies in communications on which this WETEP element concentrates are summarized in the five characteristics listed below:

The teacher

a) demonstrates personal communication competencies and flexibility in diverse socio-educational settings. (Personal Communication)

b) knows the theoretical structures and physiological-psychological-sociological factors that influence the communication process of elementary pupils. (Theoretical Structures)

c) knows developmental programs in communication. (Developmental Programs)

d) assesses each pupil's levels, needs, and competencies in cognitive and affective aspects of each process of communication and can prescribe individualized profiles of desirable communication outcomes. (Assessment and Diagnosis)

e) establishes the environment for pupil communication in a variety of socio-cultural settings. (Environment)

These characteristics are themselves the result of three sets of assumptions about the school, the communications teacher and the learner in the future school (Table 1). More specifically they relate to language in the general sense as the vehicle by which one communicates, whether he does it by writing, speaking, gesturing, dramatizing, composing his own messages, interpreting the messages of others, by reading or listening, or indeed, by his use of modern media.

The general objectives for the Communications Element are stated in Tables 2 through 11. The objectives listed are summaries based on the systems devised by Benjamin Bloom and others, and David Krathwohl and others,[3] as specifically adapted for WETEP by Ammons.[4] Tables 2 through 6 specify the cognitive objectives for each characteristic of the WETEP Communications teacher; Tables 7 through 11, the Affective Domain. Tables 2 and 7 are concerned with prerequisite behaviors expected for entrance to the element and hence are not developed within the element itself. Tables 3, 4, 5, 6, 8, 9, 10, and 11 are concerned with those behaviors specified as part of the element and are those listed as subelements.

These summaries are provided for the convenience of the reader. The objectives for each characteristic are presented in greater detail at the end of this paper. Since this paper is in fact a proposal to develop in great detail the behaviors and the program to attain them, the objectives listed are only illustrative of all that might be developed from those disciplines that can be brought to bear on the teaching of communication in the elementary school.

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[3] Bloom, Benjamin S., editor. Taxonomy of Educational Objectives Handbook I: Cognitive Domain. New York: David McKay Co., Inc. 1956, 207 pp., and David Krathwohl, Benjamin Bloom, and Bertram Masie, Taxonomy of Educational Objectives, Handbook II: Affective Domain. New York: David McKay Co., Inc., 1964. 196 pp.

[4] Ammons, Margaret. "Cognitive and Affective Levels in Teacher Education." A WETEP Position Paper. Volume I. The Wisconsin Elementary Teacher Education Project Report.

TABLE 1

ASSUMPTIONS OF THE COMMUNICATION ELEMENT

Assumptions About Communications in the Elementary School

1. The school itself will be a communications learning laboratory.
2. The program for teaching communications in the elementary school will be individualized.
3. Major emphasis in the program will be expression. Communication performance, particularly the productive communication of children and adults and the social and psychological forces which affect them, will be the prime model for the curriculum.
4. A language learning environment can be technologically perfected and programmed in such a way as to facilitate free exploration and discovery of interrelationships among the communicating processes.

Assumptions Concerning the Communications Teacher

1. Individualized learning appears to be facilitated at or along a continuum. At one end of the continuum the teacher prescribes, initiates, and paces learning, while at the other extreme the teacher supervises or prescribes the environment in which the child self-seeks, selects, and self-paces his learning.
2. Teachers need to be aware of the utility of well designed blueprints of desirable instructional outcomes in the language arts.
3. Teachers will be able to use and want to use technology and the media effectively.
4. Teachers will encourage creative communication in all of its various forms.
5. Teachers will continually reassess the structures they use to analyze communication processes since these are artificial and improvable constructs.

Assumptions About the Learner

1. All learning of language will be individualized in the schools of 1975, where individualization means self-sequencing, self-pacing, and self-selecting of learning activities.
2. Each child's communication functions are unique and may require different sequences of learning experiences.
3. Each child uses an appropriate dialect. There are, additionally, others that he can acquire if he needs them.
4. Each pupil will seek communication experiences consistent with his maturation level and interests.
5. Most of the strategies a child elects in communicating are learned naturally in an unstructured environment.
6. The ultimate goal of communication is to maximize the child's interactions with other people, and to permit him to have complete access to the thoughts, activities, and values of the people of the world.
7. Through communication a child's perceptions are changed (i.e. the child is able to control and enjoy, to broaden and heighten his awareness of self, and sensitivity to others and to things).
8. Through the extension and refinement of communication experiences, the child is better able to synthesize the eclectic wisdom of the world and to contribute to it.

The characteristics themselves are intended to be as inclusive as possible. The broad objectives (identified with modules) listed for each characteristic are likewise intended to be inclusive. However, beyond this, a detailed description of all the objectives for all the communications content areas would not be feasible. Children's literature, drama, speech, and writing, for example, intended to be a part of this element, are not specified in detail. Instead, the authors chose to develop for the area of reading the assessment and diagnosis subelement in detail. Thus at the end of this paper under Subelement III, Cognitive Domain, will be found a listing of detailed specific objectives for assessing and diagnosing reading potential, abilities, interests, difficulty, etc.

TABLE 2

PREREQUISITE BEHAVIORS FOR ENTRY INTO THE COMMUNICATIONS ELEMENT (COGNITIVE DOMAIN)

A. Knows and comprehends the principles that underlie any language.

B. Uses appropriate spoken and written linguistic structures in different social settings and assesses their effectiveness.

C. Knows and uses conventional spoken and written form and format and assesses the degree to which they are representative of the conventional.

D. Knows and uses the conventions of kinesics to communicate and evaluate their facilitation of communication.

E. Knows and uses literary resources past and present and evaluates their effectiveness in eliciting insight, establishing or influencing values, satisfying leisure needs, and providing specific information.

F. Knows and uses various media and assesses the degree to which each of the media best facilitates social insight, constructive values, entertainment, and information retrieval.

G. Knows and comprehends the social, economic, and philosophical trends that affect communication modes and language needs.

## TABLE 3

SUBELEMENT I: IS KNOWLEDGEABLE ABOUT THE EVOLUTION OF THEORETICAL STRUCTURES AND THE PHYSIOLOGICAL-PSYCHOLOGICAL-SOCIOLOGICAL FACTORS THAT INFLUENCE THE COMMUNICATION PROCESS OF ELEMENTARY PUPILS (COGNITIVE DOMAIN)

Modules

A. Knows and comprehends that communication is a perceptual-conceptual process, a sensory process, a linguistic process, a learned response, a developmental task, and a medium for learning.

B. Knows and comprehends the psychological and sociological nature of the language learner.

C. Knows and comprehends the physiology of each communication act.

D. Knows and comprehends the theoretical structures that influence the development of curricula and materials in communication, e.g., Olson's theory of self-selection, self-seeking, self-pacing in communication, Doman's neuro-chemical-motor theories, transformational and generative linguistic theories, and physiognomic perceptual theories.

E. Knows and comprehends the effects of the following factors upon a child's language development: experience, socio-economic environment, emotional stability, physiological characteristics, motivation, and the educational environment.

F. Knows and comprehends the interrelationships that exist among language processes.

G. Knows and comprehends that instruction in communication has changed over the years.

TABLE 4

SUBELEMENT II: IS KNOWLEDGEABLE ABOUT ASPECTS OF DEVELOPMENTAL PROGRAMS IN COMMUNICATION (COGNITIVE DOMAIN)

Modules

A. Knows, lists and can define the scope and varied sequences of behavioral outcomes desired when teaching each of the communication processes and can evaluate the scope and sequence of such behavioral objectives.

B. Knows and can list the intra- and inter-individual behaviors of pupils that reflect a readiness for levels of development in each communication process and can synthesize communication readiness behaviors that reflect inter- and intra-individual differences of pupils.

C. Knows and can list objectives that reflect how children can functionally apply language skills in the academic disciplines and vice versa and assesses the degree to which objectives reflect how children can functionally apply language skills in the academic disciplines and vice versa.

D. Knows, uses, and evaluates those professional publications, e.g., curriculum guides, instructive programs, and research reports, that deal with the scope and sequences of communication processes.

TABLE 5

SUBELEMENT III: ASSESSES EACH PUPIL'S LEVELS, NEEDS, AND COMPETENCIES IN COGNITIVE AND AFFECTIVE ASPECTS OF EACH PROCESS OF COMMUNICATION AND CAN PRESCRIBE INDIVIDUALIZED PROFILES OF DESIRABLE COMMUNICATION OUTCOMES (COGNITIVE DOMAIN)

Modules

A. Knows and uses different standardized tests to survey competencies, assess needs, and measure the probable potential of pupils in communication.

B. Knows and uses a number of informal techniques and instruments that survey competencies, assess needs, and measure the probable potential of pupils in language.

C. Knows, uses, and evaluates various systems for recording pupil progress data in communication.

D. Knows the elements of and charts and evaluates long range individualized profiles and sequences of desirable outcomes in the areas of communication.

## TABLE 6

## SUBELEMENT IV: ESTABLISHES THE ENVIRONMENT FOR RECOGNITION AND USE OF COMMUNICATION IN VARIETIES OF SOCIAL-CULTURAL SETTINGS (COGNITIVE DOMAIN)

Modules

A. Knows, uses, and evaluates teacher prescribed, initiated, and directed learning strategies and pupil prescribed, pupil initiated, self-paced learning modes and environment for the development of communication competency.

B. Knows, uses, and evaluates a variety of teaching-learning approaches such as: basal approaches, linguistically oriented approaches, experience oriented approaches, individualized language learning approaches, and sensory approaches.

C. Knows, uses, and evaluates a wide variety of communications instructional materials that facilitate a pupil's communication competencies.

D. Knows, prepares, and evaluates a variety of teacher and/or pupil-made communication learning materials.

E. Knows, relates, and assesses the roles of the professional and para-professional staff which influence communication learning experiences.

F. Knows the structure of, can work in, and evaluates the effects of a variety of school organizational plans and school plants which influence communication learning activities.

## TABLE 7

## PREREQUISITE BEHAVIORS FOR ENTRY INTO THE COMMUNICATIONS ELEMENT (AFFECTIVE DOMAIN)

A. Develops a sensitivity to and grows in understanding of the principles and axioms that underlie any language.

B. Develops a sensitivity to the reasons and social bases for varied spoken and written linguistic structures.

C. Increases his sensitivity to the conventional written and spoken language.

D. Develops an altertness to and values kinesics as a communication device.

E. Develops a sensitivity to and values the resources of literature past and present that are avenues for gaining social insights, personal values, satisfying leisure needs and gaining information.

F. Develops a sensitivity to and characteristically revises judgments of the resources of various media that are avenues for gaining social insights, personal values, satisfying leisure needs and gaining information.

G. Develops a sensitivity to the social, economic, and philosophical trends that affect communication modes and language needs.

## TABLE 8

SUBELEMENT I: IS SENSITIVE TO AND AWARE OF THE EVALUATION OF THEORETICAL STRUCTURES AND THE PHYSIOLOGICAL-PSYCHOLOGICAL-SOCIOLOGICAL FACTORS THAT INFLUENCE THE COMMUNICATION PROCESS OF ELEMENTARY PUPILS (AFFECTIVE DOMAIN)

---

Modules

A. Develops a sensitivity to and values communication as a perceptual-conceptual process, a sensory process, a linguistic process, a learned response, a developmental task, and a medium for learning.

B. Is characteristically sensitive to the psychological and sociological nature of the language learner.

C. Is aware of the physiology of each communications act.

D. Is sensitive to and grows in understanding of the theoretical structures that influence the development of curricula and materials in communication.

E. Is characteristically sensitive to the effects of the child's social, economic, psychological, and physical environment upon his communication development.

F. Is aware of the relationships that exist among communication processes.

G. Is aware that instruction in communication has changed over the years.

## TABLE 9

### SUBELEMENT II: IS SENSITIVE TO AND COMMITTED TO DEVELOPMENTAL PROGRAMS IN COMMUNICATIONS (AFFECTIVE DOMAIN)

Modules

A. Is aware of the scope and sequence of behavioral outcomes desired when teaching each of the communication processes to elementary pupils.

B. Develops a sensitivity to the individual behaviors of pupils that reflect a readiness for levels of development in each communication process.

C. Is sensitive to the contributions of communication to growth in the adademic disciplines and vice versa.

D. Is aware of and characteristically evaluates his behavior in light of new and better ideas from various published guides and curriculum materials.

TABLE 10

SUBELEMENT III: IS AWARE OF AND COMMITTED TO APPROPRIATE ASSESSMENT OF EACH PUPIL'S LEVELS, NEEDS, AND COMPETENCIES IN COGNITIVE AND AFFECTIVE ASPECTS OF EACH PROCESS OF COMMUNICATION AND CHARACTERISTICALLY PRESCRIBES INDIVIDUALIZED PROFILES OF DESIRABLE COMMUNICATION OUTCOMES (AFFECTIVE DOMAIN)

Modules

A. Is aware of and characteristically judges standardized tests that survey competencies, assess needs, and measure the probable potential of pupils in communication.

B. Is aware of and characteristically judges the adequacy of a number of informal techniques and instruments that survey competencies, assess needs, and measure the probable potential of pupils in communication.

C. Is aware of and characteristically judges the relevance of various criterion tests such as go/no go tests in selective learning branching within the scope of computer-assisted instruction in communication.

D. Is aware of and characteristically examines the criteria for evaluating communication measurement instruments (eg. validity; reliability)

E. Is aware of and characteristically uses proper techniques for interpreting pupil performance data in communication.

F. Is aware of and characteristically reacquaints himself with the techniques of test construction in communication.

G. Is sensitive to the distinctions among evaluating, grading, and reporting pupil progress in communication.

H. Is aware of and characteristically evaluates systems for recording pupil progress data in communication.

I. Appreciates that assessment and evaluation is a continuous process.

J. Is aware of the elements that are essential in an individualized instructional prescription in each communication process.

TABLE 11

SUBELEMENT IV: IS SENSITIVE TO THE ENVIRONMENT FOR PUPIL RECOGNITION AND USE OF COMMUNICATING PROCESSES IN A VARIETY OF SOCIAL-CULTURAL SETTINGS (AFFECTIVE DOMAIN)

Modules

A. Is aware of and characteristically revises judgments concerning teacher prescribed, initiated, and directed learning strategies and pupil prescribed, initiated, self-paced learning modes and environment for the development of communication competency.

B. Is sensitive to and characteristically revises judgments concerning a variety of teaching learning approaches in communication.

C. Is aware of and characteristically revises judgments of a wide variety of communication instruction materials that facilitate a pupil's growth in communication performance.

D. Is aware of and characteristically revises his judgments of a variety of teacher and/or pupil made learning materials.

E. Is aware of and characteristically desires to relate to the professional and paraprofessional staff who influence communication learning.

F. Is aware of and characteristically studies a variety of school organizational plans and school plants which influence communication learning.

# SYSTEMS MODEL

The models presented in Figures 1-3 describe grahpically the probable learning sequences of the Communications Element. Figure 1 presents the overall model of the element with the four subelements: theoretical structures, developmental programs, assessment and diagnosis, and environment; Figure 2 presents a model for a module within a subelement; and Figure 3 presents an instructional unit within a module.

The system allows for multiple alternative routes that are individually determined by the student in consultation with a faculty member or on the basis of technologically monitored success in any instructional unit. Determination of placement or route is based on the student's interests, abilities, and previous experiences both within and outside of the element. The flow-chart symbols used in each of the three figures have been simplified for illustrative purposes. Note that the two-digit numbers signify element operations and that three-digit numbers signify subelement operations (Figure 1). Four-digit numbers are used in the modules and the instructional units (Figures 2 and 3). Each of the systems models is exemplary and therefore, the inherent flexibility of each is not fully portrayed. Communications is abbreviates CO.

## The Model of the Communications Element

Figure 1 represents the Communications Element with the four subelement systems of this element: theoretical structures, developmental programs, assessment and diagnosis, and environment. Progress through these subelements is described below:

1) Entry 10 indicates the starting point where each student obtains a description of the element and a statement of general content objectives.

2) At decision point 30, each student, on the basis of preassessment data and faculty guidance and appraisal, chooses either to leave the element (Exit 20) or to enter the first subelement: theoretical structures.

3) If he chooses to leave, then a diagnosis is made of contributing factors (eg. lack of prerequisites, inappropriate sequencing with other elements) and he is counseled as to appropriate directions to take

or

Assuming his choice is to enter the element, the student enters the first module of the theoretical structure subelement.

4) After working in the module, a student decides his appropriate action (Decision point 100):
    a) to leave the element,
    b) to stay in the module within which he is currently working,

   c) to move to another module within the same subelement,
   d) to enter another subelement.

5) Subelements I, II, IV are designed to permit free movement among modules. Sequencing is within modules, not necessarily between predetermined modules.

6) Once the student decides to enter the Assessment and Diagnosis subelement, however, a faculty decision (150) is made. Progress through this subelement is sequential and based on successful completion of prior modules, at whatever degree of proficiency is specified by the faculty in consultation with the student (Decision points 170, 175, 180).

7) After completing the work of the element, a decision is made (100) to assess the degree of success in the element. Following this post-assessment, a decision (90) is made in which the student is advised to do further work within the element or to exit from the element (99).

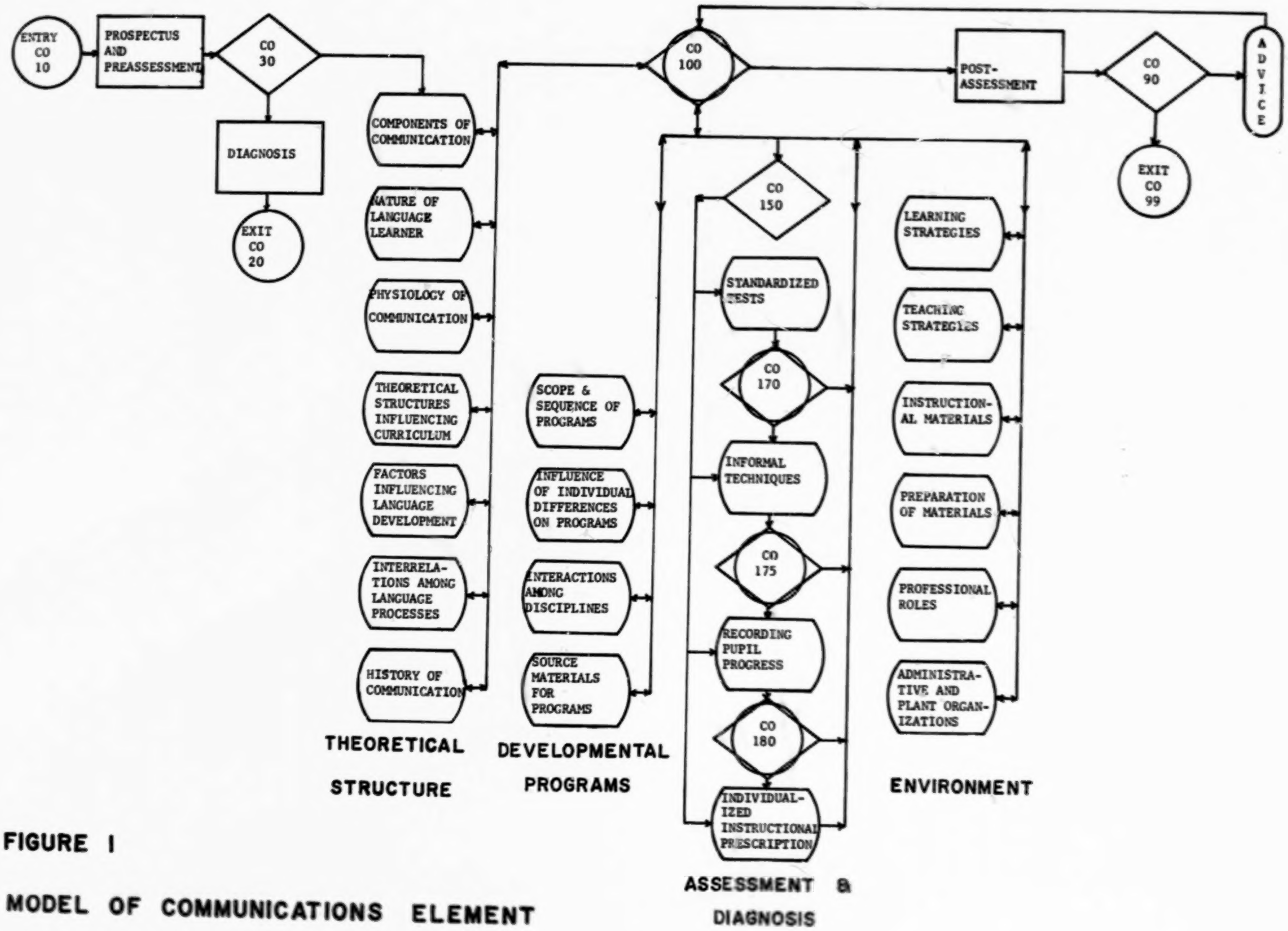

ENTRY CO 10
PROSPECTUS AND PREASSESSMENT
CO 30
DIAGNOSIS
EXIT CO 20
COMPONENTS OF COMMUNICATION
NATURE OF LANGUAGE LEARNER
PHYSIOLOGY OF COMMUNICATION
THEORETICAL STRUCTURES INFLUENCING CURRICULUM
FACTORS INFLUENCING LANGUAGE DEVELOPMENT
INTERRELATIONS AMONG LANGUAGE PROCESSES
HISTORY OF COMMUNICATION
THEORETICAL STRUCTURE
SCOPE & SEQUENCE OF PROGRAMS
INFLUENCE OF INDIVIDUAL DIFFERENCES ON PROGRAMS
INTERACTIONS AMONG DISCIPLINES
SOURCE MATERIALS FOR PROGRAMS
DEVELOPMENTAL PROGRAMS
CO 100
CO 150
STANDARDIZED TESTS
CO 170
INFORMAL TECHNIQUES
CO 175
RECORDING PUPIL PROGRESS
CO 180
INDIVIDUALIZED INSTRUCTIONAL PRESCRIPTION
ASSESSMENT & DIAGNOSIS
LEARNING STRATEGIES
TEACHING STRATEGIES
INSTRUCTIONAL MATERIALS
PREPARATION OF MATERIALS
PROFESSIONAL ROLES
ADMINISTRATIVE AND PLANT ORGANIZATIONS
ENVIRONMENT
POST-ASSESSMENT
CO 90
EXIT CO 99
ADVICE

FIGURE I

MODEL OF COMMUNICATIONS ELEMENT

## Model of a Module Within A Communications Subelement

Figure 2 represents a module within one of the communications subelements. Progress through this module is described below.

1) Entry 1000 indicates the starting point for the module where each student obtains a description of the module and a statement of the objectives for the module.

2) At decision point 1001, on the basis of appraisal information and previous experience, the student chooses to leave (Exit 1000) or to remain and to preassess his own capabilities via preassessed diagnostic and achievement instruments and/or consultation with a faculty member.

3) At decision point 1002, on thebasis of preassessment results, the student is shown that: (a) he fails to meet the prerequisites and receives a prescription for supplementary work prior to a reassessment; he then exits from the module (1000); or (b) he does meet the requirements and may proceed. Upon deciding to proceed, he receives a comprehensive overview of the module and is interviewed by a faculty member to help him chart his own path through the instructional units.

4) Following the interview, a decision (1004) is made as to the specific instructional units he will work in.

5) At any point in any of the instructional units, the student may exit and make a decision (1900) to work in another instructional unit or to engage in an appropriate post-assessment for that unit or set of units.

6) Following the post-assessment, a decision (1950) is made to either return and do further work in the units with the module or to exit (1999) from the module.

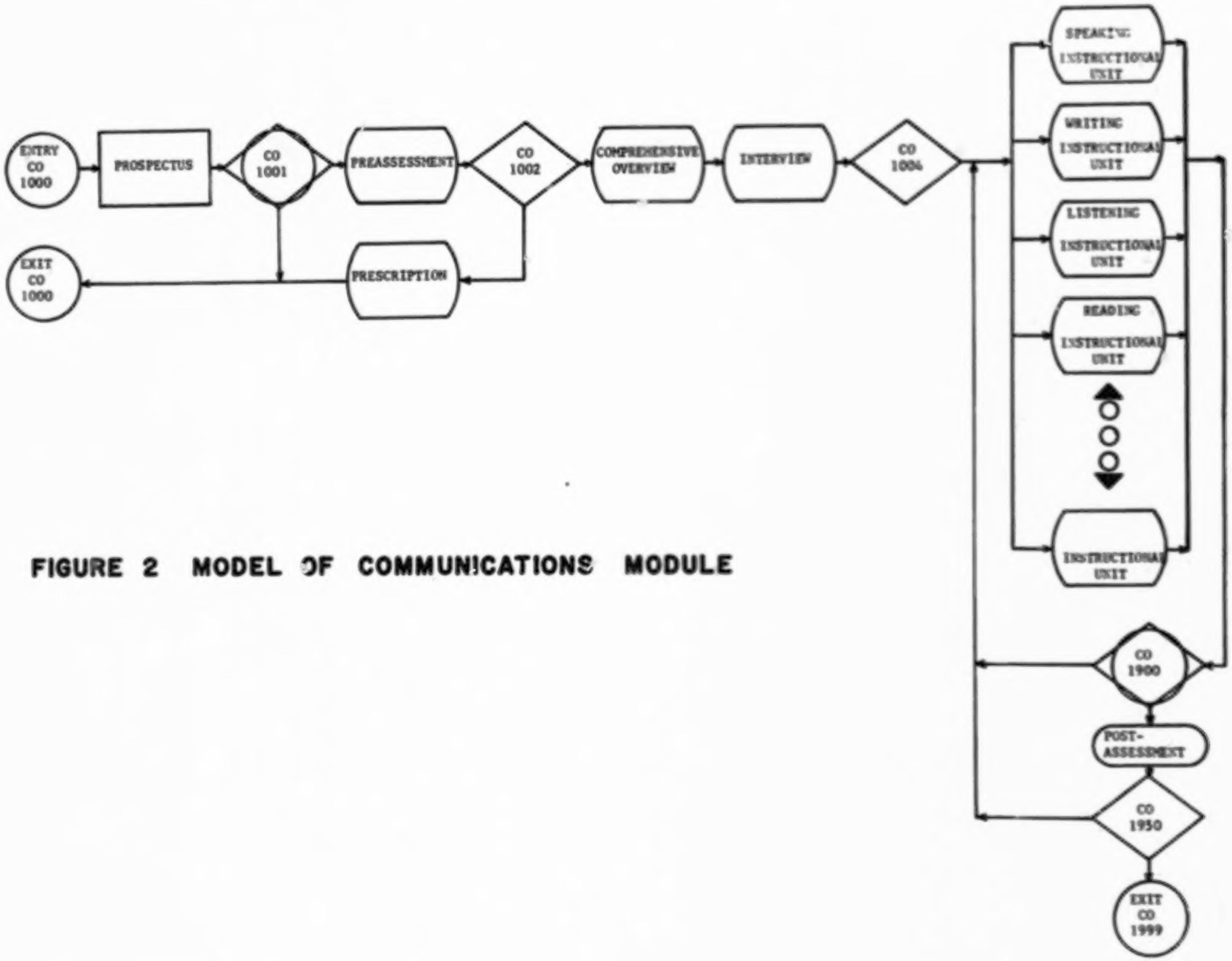

ENTRY CO 1000
PROSPECTUS
CO 1001
PREASSESSMENT
CO 1002
COMPREHENSIVE OVERVIEW
INTERVIEW
CO 1004
EXIT CO 1000
PRESCRIPTION
SPEAKING INSTRUCTIONAL UNIT
WRITING INSTRUCTIONAL UNIT
LISTENING INSTRUCTIONAL UNIT
READING INSTRUCTIONAL UNIT
INSTRUCTIONAL UNIT
CO 1900
POST-ASSESSMENT
CO 1950
EXIT CO 1999

FIGURE 2 MODEL OF COMMUNICATIONS MODULE

## Model for a Unit of Instruction Within a Communications Module

Figure 3 represents a unit of instruction within a communications module. In Figure 3, the words, knowledge, comprehension, application, analysis, synthesis, and evaluation are representative of cognitive behaviors as defined by Bloom. Order 1, order 2, and order 3 represent degrees of proficiency for various objectives. Order 1 represents a rudimentary learning objective expected of all persons in the program. Order 2 is an extended learning objective to be obtained by those interested in an area but not by everyone in the program. Order 3 is an advanced learning objective expected to be achieved by, but not limited to, those who intend to specialize in communications teaching and communications education. Progress in this unit is described below:

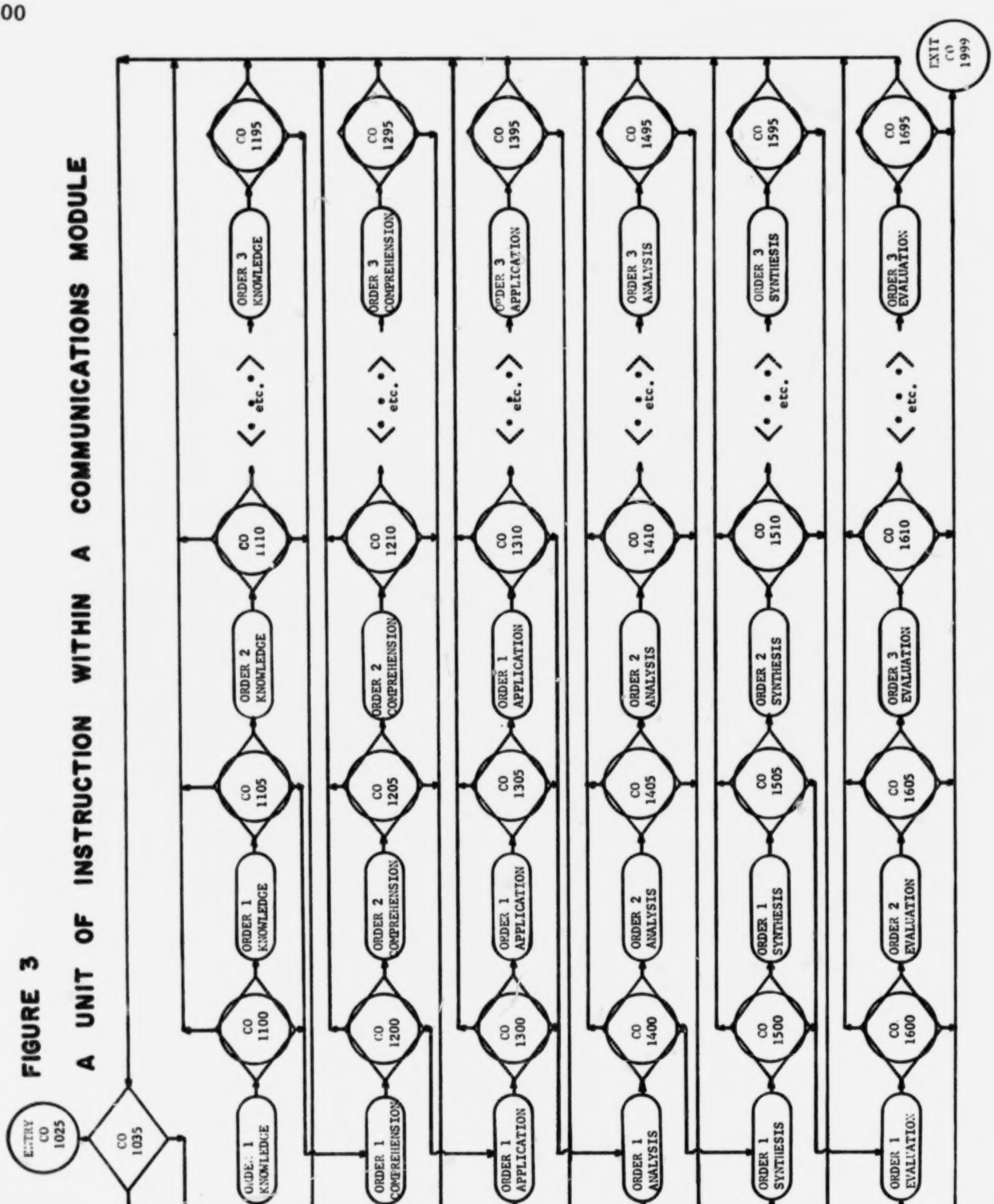
1) Entry 1025 indicates the starting point of the instructional unit.

2) At decision point 1035, the student is directed into a specific section of the unit or is directed out of the unit (Exit 1999).

3) Following work into any particular section, he may then work in any other section, or continue to work at more sophisticated levels within any one section. For example, he may begin with an Order 1 knowledge, then decide (1100) to go to an order 1 comprehension or another order 1 knowledge and so on until he has completed the rudimentary and some extended sections expected for a basis proficiency, at which time he will exit from this unit (1999) and enter another.

FIGURE 3

A UNIT OF INSTRUCTION WITHIN A COMMUNICATIONS MODULE


ENTRY CO 1025
CO 1035
ORDER 1 KNOWLEDGE
CO 1100
ORDER 1 KNOWLEDGE
CO 1105
ORDER 2 KNOWLEDGE
CO 1110
etc.
ORDER 3 KNOWLEDGE
CO 1195
ORDER 1 COMPREHENSION
CO 1200
ORDER 2 COMPREHENSION
CO 1205
ORDER 2 COMPREHENSION
CO 1210
etc.
ORDER 3 COMPREHENSION
CO 1295
ORDER 1 APPLICATION
CO 1300
ORDER 1 APPLICATION
CO 1305
ORDER 1 APPLICATION
CO 1310
etc.
ORDER 3 APPLICATION
CO 1395
ORDER 1 ANALYSIS
CO 1400
ORDER 2 ANALYSIS
CO 1405
ORDER 2 ANALYSIS
CO 1410
etc.
ORDER 3 ANALYSIS
CO 1495
ORDER 1 SYNTHESIS
CO 1500
ORDER 1 SYNTHESIS
CO 1505
ORDER 2 SYNTHESIS
CO 1510
etc.
ORDER 3 SYNTHESIS
CO 1595
ORDER 1 EVALUATION
CO 1600
ORDER 2 EVALUATION
CO 1605
ORDER 3 EVALUATION
CO 1610
etc.
ORDER 3 EVALUATION
CO 1695
EXIT CO 1999

## IMPLEMENTATION EXAMPLE*: SUBELEMENT III, MODULE A, UNIT I--Knows and Uses Standardized Tests that Survey Competencies, Assess Needs, and Measure the Probable Potential of Pupils in Reading

### Entry to Unit I

Before entry to Unit I, all students attempting to acquire some proficiencies in instructional assessments and prescriptive techniques in communication will be required to enroll in the pre-specific instructional organizing seminar for Subelement III. This seminar will be designed: (1) to acquaint the student with principles of assessment and prescription that can be generalized to all aspects and areas of communication, and (2) to serve as a vehicle for pretesting and observing students' specific needs and proficiencies in assessments and prescriptive techniques for listening, speaking, reading, and writing.

Students who exhibit specific needs in standardized testing of an elementary pupil's general reading competencies, specific reading disabilities, and probable reading capacity will be directed to enter Module A, Unit 1 for specific instruction. Within Module A, Unit 1, two optional levels of attainment will be available.

### Attainment Level I

By completing Level I, prospective (reading) teachers should be acquainted with various kinds of standardized reading tests. These include: Standardized Reading Survey Tests, Standardized Tests of Reading Potential, Standardized Reading Readiness Tests, Standardized Diagnostic Reading Tests, and Standardized Reading Criterion Tests. Student instructional activities within Level I, will include test examination, administration, and interpretation.

### Attainment Level II

Prospective reading specialists, at this level, should be able to analyze and evaluate tests, subtests, and test items. Criteria for evaluation will be made available. Specialists should be able to make cross test, item analyses of pupils' levels and needs.

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*Other exemplars have been generalized models. This example is for Subelement III, Module A, Unit I in the detailed specifications which follow.

# CHARACTERISTICS OF A WETEP
# COMMUNICATIONS TEACHER--
# COGNITIVE DOMAIN

Pre-assessment Characteristics
Subelement Behaviors I, II, III, IV
Module Behaviors
Unit Behaviors for Subelement III

## LEGEND

### CODING SYSTEM

PRE = Preassessment Characteristic
ROMAN NUMERAL (I, II, III, IV) = Subelements
UPPER-CASE LETTERS = Modules
LOWER-CASE LETTERS = Area of Study

r = reading
s = speaking
l = listening
w = writing

ARABIC NUMERAL = Ordinal Position of Unit Within Module

PREASSESSMENT CHARACTERISTICS: DEMONSTRATES PERSONAL COMMUNICATION COMPETENCIES AND FLEXIBILITY IN DIVERSE SOCIO-EDUCATIONAL SETTINGS

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| A Knows the principles or axioms that underlie any language. | Comprehends the principles or axioms that underlie any language. | Non-continuing | Non-continuing | Non-continuing | Non-continuing |
| B Knows the rationale and social bases for varied spoken and written linguistic structures. | Comprehends the rationale and social bases for varied spoken and written linguistic structures. | Uses appropriate spoken and written linguistic structures in different social settings. | Identifies elements of spoken and written linguistic structures that are common to all or peculiar to a specific social setting. | Relates his knowledge of the rationale and social bases of spoken linguistic structures with his knowledge of the rationale and social bases of written linguistic structures. | Assesses the effectiveness and appropriateness of a specific spoken or written linguistic structure in a specific social setting. |

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| C Knows the conventional spoken and written language form and format. | Comprehends the conventional spoken and written language form and format. | Uses conventional spoken and written form and format. | Identifies the elements that represent the conventional in spoken and written form and format. | Relates the conventions of spoken form and format to the conventions of written form and format. | Assesses the degree to which spoken and written form and format are representative of the conventional. |
| D Knows the conventions of kinesics. | Comprehends the conventions of kinesics. | Employs kinesic convention to communicate more clearly. | Identifies those elements and aspects of kinesics that facilitate effective and efficient communication. | Synthesizes those elements and aspects of kinesics that facilitate effective and efficient communication. | Evaluates the impact of kinesics in facilitating effective and efficient communication. |
| E Knows the resources of literature past and contemporary, that are avenues for gaining social insights, forming personal values, satisfying leisure needs and gaining information. | Comprehends the resources of literature past and present, that are avenues for gaining social insights, forming personal values, satisfying leisure needs and gaining information. | Employs literary resources past and present to gain insights, acquire personal values, satisfy leisure needs, and to gain information. | Identifies literary resources past and present as to their effects in eliciting insights, establishing a value system, satisfying specified leisure needs and providing specific kinds of information. | Interrelates the functional implications and applications of past literary resources to present literary resources. | Evaluates the effectiveness of literary resources in eliciting insight, establishing or influencing values, satisfying leisure needs, and providing specific information. |

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| F Knows the resources of various media that are avenues for gaining social insights, acquiring personal values, satisfying leisure needs and gaining information. | Knows the resources of various media that are avenues for gaining social insights, acquiring personal values, satisfying leisure needs and gaining information. | Uses various media in gaining social insights, acquiring personal values, satisfying leisure needs, and gaining information. | Identifies that media or combination of media that best facilitates gains in social insight, a socially constructive system of values, entertainment, and acquisition of information. | Synthesizes the insights and information gleaned through various media; interrelates the value systems various media reflect. | Assesses the degree to which each of the media best facilitate social insight, constructive values, entertainment, and information retrieval. |
| G Knows the social, economic, and philosophical trends that effect communication modes and language needs. | Comprehends the social, economic and philosophical trends that effect communication modes and language needs. | Non-continuing | Non-continuing | Non-continuing | Non-continuing |

SUBELEMENT I: IS KNOWLEDGEABLE ABOUT THE EVOLUTION OF THEORETICAL STRUCTURES AND THE PHYSIOLOGICAL-PSYCHOLOGICAL-SOCIOLOGICAL FACTORS THAT INFLUENCE THE COMMUNICATION PROCESSES OF ELEMENTARY PUPILS

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| A Knows that communication is a perceptual-conceptual process, a sensory process, a linguistic process, a learned response, a developmental task, and a media for learning | Comprehends communication as a perceptual-conceptual process, a sensory process, a linguistic process, a learned response, a developmental task, and a media for learning | Non-continuing | Non-continuing | Non-continuing | Non-continuing |
| B Knows about the psychological and sociological nature of the language learner | Comprehends the psychological and sociological nature of the language learner | Non-continuing | Non-continuing | Non-continuing | Non-continuing |
| C Knows about the physiology of each communication act | Comprehends the physiology of each communication act | Non-continuing | Non-continuing | Non-continuing | Non-continuing |

SUBELEMENT I: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| D Knows the theoretical structures that influence the development of curriculums and materials in communication (e.g. Olson's theory of self-selection, self-seeking, self-pacing in communication, Doman's neuro-chemical-motor theories, transformational and generative linguistic theories, and physiognomic perceptual theories) | Comprehends the theoretical structures that influence the development of curriculums and materials in communication | Non-continuing | Non-continuing | Non-continuing | Non-continuing |

SUBELEMENT I: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| E Knows the effects of the following factors upon a child's language development: experience, socio-economic environment, emotional stability, physiological characteristics, motivation, and the educational environment | Comprehends the effects of the following factors upon a child's language development: experience, socio-economic environment, emotional stability, physiological characteristics, motivation, and the educational environment | Non-continuing | Non-continuing | Non-continuing | Non-continuing |
| F Knows the interrelationships that exist among language processes | Comprehends the interrelationships that exist among language processes | Non-continuing | Non-continuing | Non-continuing | Non-continuing |

SUBELEMENT I: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| G Knows that instruction in communication has changed over the years | Comprehends that instruction in communication has changed over the years | Non-continuing | Non-continuing | Non-continuing | Non-continuing |

## SUBELEMENT II: IS KNOWLEDGEABLE ABOUT ASPECTS OF DEVELOPMENTAL PROGRAMS IN COMMUNICATION

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| A Knows the scope and varied sequence of behavioral outcomes desired when teaching each of the language processes to elementary pupils. | Comprehends the scope and varied sequence of behavioral outcomes desired when teaching each of the language processes to elementary pupils. | Lists and can define the scope and varied sequence of behavioral outcomes desired when teaching each of the communication processes to elementary pupils. | Classifies elements in the scope and varied sequence of behavioral outcomes desired when teaching each of the communication processes to elementary pupils. | Formulates the scope and varied sequence of behavioral outcomes desired when teaching each of the communication processes to elementary pupils. | Evaluates the appropriateness of scope and sequence of behavioral objectives in communication processes. |
| B Knows the intra and inter individual behaviors of pupils that reflect a readiness for levels of development in each communication process. | Comprehends the intra and inter-individual behaviors of pupils that reflect a readiness for levels of development in each communication process. | Lists the intra and inter-individual behaviors of pupils that reflect a readiness for levels of development in each communication process. | Classifies the intra and inter individual behaviors of pupils that reflect a readiness for levels of development in each communication process. | Synthesizes communication readiness behaviors that reflect inter and intra individual differences of pupils. | Non-continuing |

SUBELEMENT II: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| C Knows that language contributes to growth in the academic disciplines and vice versa. | Comprehends that language contributes to growth in the academic disciplines and vice versa. | Lists objectives that reflect how children can functionally apply language skills in the academic disciplines and vice versa. | Classifies objectives that reflect how children can functionally apply language skills in the academic disciplines and vice versa. | Synthesizes instructional objectives that reflect how children can functionally apply language skills in the academic disciplines and vice versa. | Assesses the degree to which objectives reflect how children can functionally apply language skills in the academic disciplines and vice versa. |
| D Knows that curriculum guides, instructive programs, and media deal with the scope and sequence of language development. | Comprehends that curriculum guides, instructive programs, and media deal with the scope and sequence of language development. | Uses those professional publications (e.g. curriculum guides, instructive programs, research reports) that deal with the scope and sequence of communication processes. | Identifies professional publications (e.g. curriculum guides, instructive programs, research reports) that deal with the scope and sequence of communication processes. | Prepares professional materials that deal with the scope and sequence of communication processes. | Evaluates professional materials that deal with the scope and sequences of communication processes. |

SUBELEMENT III: ASSESSES PUPIL'S LEVELS, NEEDS, AND COMPETENCIES IN EACH PROCESS OF COMMUNICATION AND CAN PRESCRIBE INDIVIDUALIZED PROFILES OF DESIRABLE COMMUNICATION OUTCOMES

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| A Knows the characteristics of standardized tests that survey competencies, assess needs, and measure the probable potential of pupils in language. | Comprehends the differences between standardized tests that survey competencies, assess needs, and measure the probable potential of pupils in language. | Uses different standardized tests to survey competencies, assess needs, and measure the probable potential of pupils in language. | Non-continuing | Non-continuing | Non-continuing |
| B Knows a number of informal techniques and instruments that survey competencies, assess needs, and measure the probable potential of pupils in language. | Comprehends a number of informal techniques and instruments that survey competencies, assess needs, and measure the probable potential of pupils in language. | Employs a number of informal techniques and instruments that survey competencies, assess needs, and measure the probable potential of pupils in language. | Non-continuing | Non-continuing | Non-continuing |

SUBELEMENT III: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| C Knows systems for recording pupil progress data in communication. | Comprehends systems for recording pupil progress data in communication. | Uses various systems for recording pupil progress data in communication. | Classifies systems for recording pupil progress data in communication. | Interrelates elements that are common to all or unique to a particular system for recording data. | Evaluates the degree to which a test validly and reliably assesses pupil language learning outcomes. |
| D Knows the elements that are essential in an individualized instructional prescription in communication. | Comprehends the elements that are essential in an individualized instructional prescription in communication. | Charts long range individualized profiles and sequences of desirable outcomes and considers the timing for a language accomplishment. | Analyzes the elements of long range and short term instructional prescriptions in communication. | Synthesizes short term instructional prescriptions to project a long range profile of desirable individual pupil progress in communication. | Evaluates the degree to which an instructional prescription meets essential criteria. |

SUBELEMENT IV: ESTABLISHES THE ENVIRONMENT FOR RECOGNITION AND USE OF COMMUNICATION IN VARIETIES OF SOCIAL-CULTURAL SETTINGS

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| A Know teacher prescribed, initiated, and directed learning strategies and pupil prescribed, pupil-initiated, self-paced learning modes and environment for the development of communication competency. | Comprehends teacher prescribed, initiated, and directed learning strategies and pupil prescribed, pupil-initiated, self-paced learning modes and environments for the development of communication competency. | Uses teacher prescriptive, initiated, directed instructional techniques and encourages pupil prescriptive, self-initiated, self-paced learning in communication. | Identifies teacher and/or pupil behaviors which are related to teacher initiated and directed language learning experiences in contrast to those which are pupil- prescriptive, self-paced language learning experiences. | Integrates teacher prescriptive and pupil self-initiated language learning experiences. | Assesses the appropriateness of prescriptive and/or self-initiated instruction in language learning experiences. |

SUBELEMENT IV: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| B Knows a variety of teaching-learning approaches such as: basal approaches, linguistically oriented approaches, experience oriented approaches, individualized language learning approaches, and sensory approaches. | Comprehends a variety of teaching-learning approaches such as: basal approaches, linguistically oriented approaches, experience oriented approaches, individualized language learning approaches, and sensory approaches. | Employs a variety of teaching-learning approaches to facilitate language learning such as: basal approaches, linguistically oriented approaches, language-experience oriented approaches, individualized learning approaches, and sensory approaches. | Identifies and relates a teaching approach with a single or series of pupil learning modalities. | Integrates the facilitative features of any number or combination of teaching-learning approaches to communication mastery. | Evaluates the facilitative features of any number or combination of teaching-learning approaches to communication mastery. |

SUBELEMENT IV: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| C Knows a wide variety of instructional materials that facilitate a pupil's communication competencies including: basal materials, trade books, self-directive-corrective materials, programmed and computer-assisted instruction, workbooks, and audio-visual-kinesthetic resources | Comprehends a wide variety of instructional materials that facilitate a pupil's competencies including: basal materials, trade books, self-directive corrective materials, programmed and computer-assisted instruction, workbooks, and audio-visual-kinesthetic resources | Uses a wide variety of instructional materials that facilitate pupils' communication learning including: basal materials, trade books, self-directive-corrective materials programmed and computer-assisted instruction, workbooks, and audio-visual kinesthetic resources | Classifies instructional materials in communication as to their type, function, utility, accessibility, and costs | Integrates various types of instructional materials to facilitate communication learning | Evaluates the effects of various types of materials on pupil's communication achievements |

SUBELEMENT IV: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| D Knows principles for the preparation of a variety of teacher and/or pupil made communication learning materials | Comprehends the principles for the preparation of a variety of teacher and/or pupil made communication learning materials | Prepares independently or with pupils a variety of materials related to communication learning | Classifies teacher-pupil constructed communication learning activities and materials as to type and utility | Integrates various teacher and pupil devised materials to facilitate communication learning | Evaluates the utility and effectiveness of teacher-pupil devised and planned materials on communication learning |
| E Knows the role and the interrelationships among the roles of the professional and the paraprofessional staff which influence communication-learning experiences | Comprehends the interrelationships among the roles of the professional and para-professional staff which influence communication learning experiences | Relates well to other professional and para-professional members of the staff that direct, supervise, or influence the communication facilities of pupils | Identifies his personal role and the roles that other instructional staff members must play to facilitate communication learning | Integrates and interrelates the instructional tasks and responsibilities of all professional and para-professional members of the instructional staff to facilitate communication learning | Assesses the accomplishments of the instructional staff in their facilitation of communication learning |

SUBELEMENT IV: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| F Knows a variety of school organizational plans and school plants which influence communication learning activities | Comprehends a variety of school organizational plans and school plants which influence communication learning activities | Can successfully instruct and prepare facilitative communication instructional environments within a variety of types of school organizational plans and school plants | Identifies elements in instruction, in the instructional environment, and in school's organizational structure that facilitate communication learning | Integrates the elements of instruction, school environment, and school organization to facilitate communication learning of pupils | Evaluates the effects of administrative organization and school plant planning on communication learning activities |

SUBELEMENT III: ASSESSES EACH PUPIL'S LEVELS, NEEDS, AND COMPETENCIES IN COGNITIVE AND AFFECTIVE ASPECTS OF THE COMMUNICATION PROCESS AND CAN PRESCRIBE INDIVIDUAL PROFILES OF DESIRABLE COMMUNICATION OUTCOMES.

MODULE A: KNOWS AND USES STANDARDIZED TESTS THAT SURVEY COMPETENCIES, ASSESS NEEDS, AND MEASURE THE PROBABLE POTENTIAL OF PUPILS IN COMMUNICATION.

UNITS r: KNOWS AND USES STANDARDIZED TESTS THAT SURVEY COMPETENCIES, ASSESS NEEDS, AND MEASURE THE PROBABLE POTENTIAL OF PUPILS IN READING.

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| /STANDARDIZED READING SURVEY TESTS (SRST) UNITS/ | | | | | |
| 1 Knows that Standardized Reading Survey Tests (SRST's) measure comprehension, vocabulary, and sometimes rate of reading | Comprehends that an assessment of vocabulary level, comprehension level, and rate of reading yields a generalized survey of reading achievement | Uses SRST's to assess reading vocabulary level, reading comprehension level, and rate of reading | Classifies items according to the three categories of assessment on a SRST: comprehension, vocabulary, and speed | Non-continuing | Non-continuing |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 2 Knows a number of SRST's (eg. Stanford, Metropolitan, California, Gates McGinity, and the Iowa Silent Reading Test) in terms of their content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost | Comprehends the content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost per utility of a number of SRST's (eg. Stanford, Metropolitan, California, Gates McGinity, and the Iowa Silent Reading Tests) | Administers and scores a number of SRST's (eg. Stanford, Metropolitan, California, Gates McGinity, and the Iowa Silent Reading Test) | Analyzes the content, reliability, validity, derived scores, norms, scoring procedures, and cost per utility of a number of SRST's (eg. Stanford, Metropolitan, California, Gates McGinity, and the Iowa Silent Reading Tests) | No entry | Compares the relative merits of various SRST's according to standards set forth by measurement authorities |
| 3 Knows that the subtests within SRST's may not measure independent abilities | Comprehends why subtests within SRST's do or do not measure independent abilities | Uses those subtests from SRST's which measure specific independent abilities | Isolates and categorizes those subtests within SRST's that measure independent abilities | No entry | No entry |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 4 Knows that items designed to measure the same reading ability are constructed differently across SRST's | Comprehends how items designed to measure the same reading ability are constructed differently across SRST's | No entry | Classifies items designed to measure the same ability on SRST's that measure independent abilities | No entry | Evaluates the degree to which the designs of SRST's items may affect pupil performance on them |
| 5 Recognizes that items designed to measure vocabulary, and comprehension within and across SRST's elicit different levels of responses | Comprehends the different levels of responses elicited on items within and across SRST's designed to measure vocabulary and comprehension | No entry | Categorizes the different levels of responses elicited on items within and across SRST's designed to measure vocabulary and comprehension | No entry | Evaluates the different levels of responses elicited on items within and across SRST's designed to measure vocabulary and comprehension |
| 6 Knows that the limits of SRST's for particular grade levels may not be appropriate for Ss in these grade levels | Comprehends how limits of SRST's for particular grade levels may be restrictive in reading achievement assessments | Use appropriate SRST's as determined by a child's performance and not by his grade placement | Analyzes how the limits of SRST's for particular grade levels may be restrictive in reading achievement assessments | No entry | Evaluates the degree to which the limits of SRST's for particular grade levels may be restrictive in reading achievement assessments |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| /STANDARDIZED TESTS OF READING POTENTIAL/ | | | | | |
| 7 Knows a number of standardized tests of reading potential (eg. Durrell-Sullivan Reading Capacity, Peabody Picture Vocabulary Test and the Listening Subtest of the STEP Tests) in terms of their content, reliability, validity, derived scored, norms, administration and scoring procedures, and costs | Comprehends the content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost per utility of a number of standardized tests of reading potential (eg. Durrell-Sullivan Reading Capacity Test, Peabody Picture Vocabulary Test, and the Listening subtest of the STEP tests) | Administers and scores a number of standardized tests of reading potential (eg. Durrell-Sullivan Reading Capacity Test, Peabody Picture Vocabulary Test, and the Listening subtest of the STEP tests) | Analyzes the content, reliability, validity, derived scores, norms scoring procedures, and cost per utility of a number of reading potential tests (eg. Durrell-Sullivan Reading Capacity Tests, Peabody Picture Vocabulary Test, and the Listening subtest of the STEP tests) | Non-continuing | Non-continuing |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| /STANDARDIZED READING READINESS TESTS (SRRT)/ | | | | | |
| 8 Knows a number of Standardized Reading Readiness Tests (SRRT's) (eg. Metropolitan, Durrell-Murphy, Clymer-Barrett, Harrison-Stroud, Lee-Clark) in terms of their content, reliability, validity, derived scores, norms, administration and scoring procedures and costs | Comprehends the content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost per utility of a number of SRRT's (eg. Metropolitan Durrell-Murphy, Clymer-Barrett, Harrison-Stroud, and Lee-Clark) | Administers and scores a number of SRRT's (eg. Metropolitan, Durrell-Murphy, Clymer-Barrett, Harrison-Stroud, and Lee-Clark) | Analyzes the content, reliability, validity, derived scores, norms, scoring procedures, and cost per utility of a number of SRRT's (eg. Metropolitan, Durrell-Murphy, Clymer-Barrett, Harrison-Stroud, and Lee-Clark) | Non-continuing | Non-continuing |
| 9 Knows that SRRT's measure different subskills and abilities | Comprehends the different subskills and abilities that SRRT's measure | Uses subtests from SRRT's which measure different subskills and abilities | Classifies subtests from SRRT's according to the subskills and abilities measure | Non-continuing | Non-continuing |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 10 Knows that reading readiness tests' subtests, designed to measure similar skills and abilities, may be constructed differently across SRRT's | Comprehends why reading readiness tests' subtests, designed to measure similar skills and abilities, may be constructed differently across SRRT's | Uses differently designed subtests from SRRT's which purport to measure the same ability | Classifies items designed to measure the same or similar skills and abilities on SRRT's in view of how differently they are constructed | Formulates a battery of readiness tasks which measure a cross section of skills and abilities in a variety of groups | Evaluates the degree to which the designs in construction of SRRT's items may affect pupil performance on them |
| /STANDARDIZED DIAGNOSTIC READING TESTS/ | | | | | |
| 11 Knows that standardized diagnostic reading tests fall into four categories: individual oral diagnostic tests (IODT), individual diagnostic tests, group silent reading diagnostic tests, and tests of word recognition | Comprehends the distinctive characteristics of the four categories of standardized diagnostic reading tests: individual oral diagnostic reading tests (IODRT), individual diagnostic reading tests, group silent reading diagnostic tests, and tests of word recognition | Uses representative tests from each of the four categories of diagnostic reading tests for appropriate purposes | Classifies standardized diagnostic reading tests into one of four categories: (IODRT), individual diagnostic reading tests, group silent reading diagnostic tests, and tests of word recognition | Non-continuing | Non-continuing |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 12 Knows a number of group diagnostic reading tests (GDRT) (eg. Doren and Bond-Balow-Hoyt) in terms of their content, reliability, validity, derived scores, norms, administration and scoring procedure, and cost | Comprehends the content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost per utility of a number of GDRT (eg. Doren and Bond-Balow-Hoyt) | Administers and scores a number of GDRT (eg. Doren and Bond-Balow-Hoyt) | Analyzes the content, reliability, validity, derived scores, norms, scoring procedures, and cost per utility of a number of GDRT (eg. Doren and Bond-Balow-Hoyt) | No entry | Judges the adequacy of GDRT according to criteria set forth by measurement authorities |
| 13 Knows that the subtests within GDRT may or may not measure independent abilities | Comprehends why the subtests within GDRT may or may not measure independent variables | Uses those subtests from GDRT's which measure specific independent abilities | Isolates and categorizes those variables within the subtests of GDRT's that are independent | Non-continuing | Non-continuing |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 14 Knows a number of diagnostic tests of word recognition (DTOWR) (eg. McCullough, Roswell-Chall, California Phonics Survey) in terms of their content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost | Comprehends the content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost per utility of a number of DTOWR's (eg. McCullough, Roswell-Chall, and California Phonics Survey) | Administers and scores a number of DTOWR's (eg. McCullough, Roswell-Chall, and California Phonics Surveys) | Analyzes the content, reliability, validity, derived scores, norms, scoring procedures, and cost per utility of a number of DTOWR's (eg. McCullough, Roswell-Chall, and California Phonics Surveys) | No entry | Judges the adequacy of DTOWR according to criteria set forth by measurement authorities |
| 15 Knows that the subtests within DTOWR may or may not measure independent variables | Comprehends why subtests within DTOWR may or may not measure independent variables | Uses those subtests from DTOWR that measure independent abilities | Isolates and categorizes those subtests of DTOWR that measure independent abilities | Non-continuing | Non-continuing |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 16 Knows that Individual Oral Diagnostic Reading Tests (IODRT) measure oral reading comprehension, types and patterns of word recognition, errors, patterns of oral reading behaviors, and usual rate of oral reading | Comprehends how how and to what degree IODRT measure oral reading comprehensions, types and patterns of word recognition, errors, patterns of oral reading behaviors, and usual rate of oral reading | Uses IORDT to measure some or all of the abilities they purport to measure | Analyzes the degree to which IORDT measure oral reading comprehension, types and patterns of word recognition, errors, patterns of oral reading | Non-continuing | Non-continuing |
| 17 Knows a number of IODRT (eg. the Gray, Gilmore and Leavel Oral Reading Tests) in terms of their content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost | Comprehends the content, reliability, validity, derived scores, norms, administration and scoring procedures, and cost per utility of a number of IODRT (eg. the Gray, Gilmore, and Leavel Oral Diagnostic Reading Tests) | Administers and scores a number of IORDT (eg. Gray, Gilmore, and Leavel Oral Diagnostic Reading Tests) | Analyzes the content, reliability, validity, derived scores, norms, scoring procedures, and cost per utility of a number of IORDT (eg. Gray, Gilmore, and Leavel Oral Diagnostic Reading Tests) | No entry | Judges the adequacy of IORDT according to criteria set forth by measurement authorities |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 18 Knows that IODRT determine types of errors in word recognition in different ways | Comprehends the different ways in which errors in word recognition can be determined through the use of IODRT | Uses various IODRT which employ different scoring protocols | Classifies the different ways in which errors in word recognition can be determined through the use of IODRT | No entry | Evaluates the effectiveness of the different ways in which errors in word recognition can be determined through use of IODRT |
| 19 Knows that IODRT are designed for use across a number of grade levels | Comprehends the unique character of IODRT that lend to their use across a number of age/grade levels | Uses IODRT to test children from various grade levels | Classifies those characteristics of IODRT that uniquely lend to their use across a number of age/grade levels | No entry | Judges the adequacy of various IODRT for use at particular grade levels |
| 20 Knows a number of individual diagnostic reading tests (IDRT) (eg. Durrell, Gates-McKillop, Monroe, and Spache) in terms of their content, reliability, derived scores, norms, administration and scoring procedures and cost | Comprehends the content, reliability, derived scores, norms, administration and scoring procedures and cost per utility of a number of IDRT (eg. Durrell, Gates-McKillop, Monroe, and Spache Diagnostic Reading Tests) | Administers and scores a number of IODRT (eg. Durrell, Gates-McKillop, Monroe, and Spache Diagnostic Reading Tests) | Analyzes the content, reliability, validity, derived scores, norms, scoring procedures, and cost per utility of a number of IODRT (eg. Durrell, Gates-McKillop, Monroe, and Spache Diagnostic Reading Tests) | No entry | Judges the adequacy of Individual Diagnostic Reading Tests according to criteria set forth by measurement authorities |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 21 Knows that IDRT subtests designed to measure similar abilities and skills may be constructed differently across IDRT | Comprehends why subtests designed to measure similar skills and abilities may be constructed differently across IDRT | Uses differently designed subtests from a number of IDRT which purport to measure the same ability. | Classifies items designed to measure the same ability on IODRT in view of how differently they are constructed | No entry | Evaluates the degree to which designs in the construction of IDRT items may affect pupil performance on them |
| 22 Knows that the subtests within IDRT may or may not measure independent abilities | Comprehends why subtests within IDRT may or may not measure independent abilities | Uses subtests from various IDRT which measure independent abilities | Isolates and categorizes those variables within the subtests of IODRT that are independent | Non-continuing | Non-continuing |
| /STANDARDIZED CRITERION TESTS/ | | | | | |
| 23 Knows the function of various criterion tests such as go/no-go tests for selective learning branching in reading | Comprehends the functions of various criterion tests such as go/no-go tests for selective learning branching in reading | Uses various criterion tests appropriately | Analyzes the functions of various criterion tests such as go/no-go tests for selective learning branching in reading | No entry | Evaluates the functions of various criterion tests such as go/no-go tests for selective learning branching in reading |

SUBELEMENT III, MODULE A, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 24 Knows the techniques of interpreting and reporting pupil performance data from standardized measurement instruments in reading | Comprehends the techniques of interpreting and reporting pupil performance data from standardized measurement instruments in reading | Interprets and reports pupil performance data from standardized measurement instruments in reading | Classifies the techniques of interpreting and reporting pupil performance data from standardized measurement instruments in reading | Interrelates the techniques of interpreting and reporting pupil performance data from standardized measurement instruments in reading | Evaluates the techniques of interpreting and reporting pupil performance data from standardized measurement instruments in reading |

SUBELEMENT III: ASSESSES EACH PUPIL'S LEVELS, NEEDS, AND COMPETENCIES IN COGNITIVE AND AFFECTIVE ASPECTS OF THE COMMUNICATION PROCESS AND CAN PRESCRIBE INDIVIDUAL PROFILES OF DESIRABLE COMMUNICATION OUTCOMES.

MODULE B: KNOWS AND USES A NUMBER OF INFORMAL TECHNIQUES AND INSTRUMENTS THAT SURVEY COMPETENCIES, ASSESS NEEDS, AND MEASURE THE PROBABLE POTENTIAL OF PUPILS IN COMMUNICATION.

UNITS r: KNOWS AND USES A NUMBER OF INFORMAL TECHNIQUES AND INSTRUMENTS THAT SURVEY COMPETENCIES, ASSESS NEEDS AND MEASURE THE PROBABLE POTENTIAL OF PUPILS IN READING.

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 1 Knows how a reading frustration level, instructional level and capacity level are assessed informally | Comprehends how the reading frustration level, instructional level, independent level, and capacity level are assessed informally | Assesses the reading frustration level, instructional levels, independent levels, and capacity levels of pupils informally | Analyzes each pupils' level of frustration, independence, instruction, and capacity in reading as assessed informally | Interrelates pupils' informal performance levels (eg. reading frustration level, instructional level, independent level, and capacity level | Evaluates the effectiveness of informal assessments of pupils' reading frustration levels, instructional levels, independent levels, and capacity levels |

SUBELEMENT III MODULE B, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 2 Knows a number of group and individual reading inventories (eg. Betts Reading Inventories, Botel Reading Inventories, Strang Reading Inventory, the Durkin Phonics Survey, the San Diego Reading Attitude Inventory) that provide information about general levels of reading comprehension, vocabulary, word recognition, or interests | Comprehends a number of group and individual reading inventories (eg. Betts Reading Inventories, Botel Reading Inventories, Strang Reading Inventory, the Durkin Phonics Survey, the San Diego Reading Attitude Inventory) that provide information about general levels of reading comprehension, vocabulary, word recognition, or interests | Administers a number of group and individual reading inventories (eg. Betts Reading Inventories, Strang Reading Inventory, the Durkin Phonics Survey, and the San Diego Reading Attitude Inventory) that provide information about general levels of reading comprehension, vocabulary, word recognition or interests | Classifies a number of group and individual reading inventories (eg. Betts Reading Inventories, Strang Reading Inventory, Botel Reading Inventories, the Durkin Phonics Survey, the San Diego Reading Attitude Inventory) as to whether they provide information about general levels of reading comprehension, vocabulary, word recognition or interests | Synthesizes the information about general levels of reading comprehension, vocabulary, word recognition, or interests obtained through use of a number of group and individual reading inventories (eg. Betts Reading Inventories, Botel Reading Inventories, Strang Reading Inventory, Durkin Phonics Survey, and the San Diego Reading Attitude Inventory) | Evaluates the degree to which a number of group and individual reading inventories (eg. Betts Reading Inventories, Botel Reading Inventories, Strang Reading Inventory, the Durkin Phonics Survey, and the San Diego Reading Attitude Inventory) yield appropriate information about general levels of reading comprehension, vocabulary, interests, or word recognition |

SUBELEMENT III, MODULE B, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 3 Knows that competencies and needs can be informally assessed through published instruments not strictly standardized (eg. EDL Reading Versatility Tests, SRA Reading Laboratory Placement Tests, tests accompanying basal Reading programs, MacMillan Skills Spectrum Tests, Mills Learning Methods Tests, and the Peabody Library Information Test) | Comprehends that competencies and needs can be informally assessed through published instruments not strictly standardized (eg. EDL Reading Versatility Tests, SRA Reading Laboratory Placement Tests, tests accompanying basal reading programs, MacMillan Skills Spectrum Tests, Mills Learning Methods Tests, and the Peabody Library Information Test) | Assesses the competencies and needs of the pupils informally with published instruments not strictly standardized (eg. EDL Reading Versatility Tests, SRA Reading Laboratory Placement Tests, tests Accompanying basal reading programs, MacMillan Skills Spectrum Tests, Mills Learning Methods Test, and the Peabody Library Information Test) | Classifies a number of informal published tests, not strictly standardized as to the type of competencies and needs each assesses (eg. EDL Reading Versatility Tests, SRA Reading Laboratory Placement Tests, tests accompanying basal reading programs, MacMillan Skills Spectrum Tests, Mills Learning Methods Test, and the Peabody Library Information Test) | Synthesizes information about reading needs and competencies that published, unstandardized tests yield (eg. EDL Reading Versatility Tests, SRA Reading Laboratory Placement Tests, tests accompanying basal reading programs, MacMillan Skills Spectrum Tests, Mills Learning Methods Tests, and the Peabody Library Information Test) | Evaluates the utility of published unstandardized instruments for gathering other kinds of information about reading needs and competencies |

SUBELEMENT III, MODULE B, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 4 Knows ways in which an informal experience-activity inventory of readiness can be designed as a group measure of auditory comprehension and concept development, visual and auditory discrimination, and visual-auditory association | Comprehends ways in which an informal experience-activity inventory of reading readiness can be designed as a group measure of auditory comprehension and concept development, visual and auditory discrimination and visual-auditory association | Designs and administers informal experience-activity inventories of the following reading readiness sub-skills: auditory comprehension and concept development, visual and auditory discrimination, and visual-auditory association | Analyzes items on an informal experience-activity inventory of reading readiness to determine whether they assess group auditory comprehension and concept development, visual and auditory discrimination, and visual-auditory association | Synthesizes information about auditory comprehension and concept development, visual and auditory discrimination, and visual-auditory association that group informal experience-activity inventories of reading readiness yield | Evaluates the utility of informal experience-activity inventories of readiness sub-skills |
| 5 Knows ways in which vocabulary proficiencies can be assessed informally through picture-association representation tasks, definition-plausibility tasks, and/or vocabulary utilization tasks | Comprehends ways in which vocabulary proficiencies can be assessed through picture-association representation tasks, definition-plausibility tasks, and/or vocabulary utilization tasks | Assesses the vocabularies of pupils informally through picture-association representation tasks, definition-plausibility tasks, and/or vocabulary utilization tasks | Classifies types of tasks through which vocabulary proficiencies can be assessed (eg. picture-association representation tasks, definition plausibility tasks, and/or vocabulary utilization tasks | Synthesizes information about vocabulary proficiencies assessed informally through picture-association representation tasks, definition-plausibility tasks, and/or vocabulary utilization tasks | Evaluates the utility and efficiency of assessment of pupils' reading vocabularies through picture-association representation tasks, definition-plausibility tasks, and/or vocabulary utilization tasks |

SUBELEMENT III, MODULE B, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 6 Knows how to construct a paper and pencil test that surveys phonic knowledge informally | Comprehends how to construct a paper and pencil tests that surveys phonic knowledge informally | Constructs and administers paper and pencil tests that survey phonic knowledge informally | Analyzes items on paper and pencil tests that survey the specifics of phonic knowledge informally (eg. recognition of numerous vowel and consonant phoneme/grapheme correspondence | Synthesizes various aspects of a pupil's phonic knowledge as surveyed through an informally constructed paper and pencil test | Evaluates the adequacy of paper and pencil tests for surveying phonic knowledge informally |
| 7 Knows that comprehension levels and comprehension abilities can be informally surveyed with selected or prepared paragraphs | Comprehends that comprehension levels and comprehension abilities can be informally surveyed with selected or prepared paragraphs | Selects or prepares and administers paragraphs through which pupils' comprehension levels and abilities are informally assessed | Classifies selected and prepared paragraphs as to the comprehension levels they represent and the comprehension abilities that each assess | Relates pupil's general comprehension proficiency level to his proficiency in selected comprehension skill areas | Evaluates the adequacy of various learning demonstration tasks for surveying pupils' reading interests |

SUBELEMENT III, MODULE B, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 8 Knows the demonstration tasks that can be used (eg. individualized cataloguing of favorite books) for surveying current reading interests | Comprehends the demonstration tasks that can be used (eg. individualized cataloguing of favorite books) for surveying current reading interests | Surveys pupils' reading interests by assigning varieties of demonstration tasks (eg. pupils' individually cataloguing favorite books) | Analyzes demonstration tasks used for surveying current reading interests (eg. pupil cataloguing of favorite books) | Synthesizes various demonstration tasks to survey pupils' reading interests | Evaluates the adequacy of various learning demonstration tasks for surveying pupils' reading interests |
| 9 Knows the ways in which pupil-teacher conferences may be used to assess silent and oral reading competencies, needs, and interests | Comprehends the ways in which pupil-teacher conferences may be used to assess silent and oral reading competencies, needs, and interests | Conducts pupil-teacher conferences to assess silent and oral reading competencies, needs, and interests | Analyzes the ways in which silent and oral reading competencies, needs, and interests are assessed during pupil-teacher conferences | Synthesizes information about a pupils' pupils' silent and oral reading competencies, needs, and interests, obtained during pupil-teacher conferences | Evaluates the degree to which information about a pupil's silent and oral reading competencies, needs, and interests can be assessed through pupil-teacher conferences |
| 10 Knows that competencies and needs can be informally assessed through an analysis of errors on basic workbook pages | Comprehends that competencies and needs can be informally assessed through an analysis of errors on basic workbook pages | Examines pupil's errors on basic workbook pages to informally detect pupil's needs or competencies | Classifies responses of pupils' on basic workbook pages that reflect reading competencies and needs | Synthesizes the information about pupils' needs and competencies in reading assessed through an analysis of errors on basic workbook pages | Evaluates the utility of an analysis of pupil errors on basic workbook pages in the assessment of reading needs and competencies |

SUBELEMENT III, MODULE B, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 11 Knows several ways to informally measure rate of reading comprehension (eg. flashcard techniques, set-time period) | Comprehends several ways to informally measure rate of reading comprehension (eg. flashcard techniques, set-time period) | Measures pupils' rate of reading informally through selected techniques (eg. flashcard techniques, set-time period) | Analyzes the procedures through which rate of reading comprehension can be measured informally (eg. flashcard techniques, set-time period) | Synthesizes selected techniques for measurement of pupils' rate of reading | Evaluates the effectiveness of selected techniques for measurement of pupils' rate of reading |
| 12 Knows that eye-voice span can be informally measured by having the pupil say all the words or syllables he can "read" after a page of print is covered | Comprehends that eye-voice span can be informally measured by having the pupil say all the words or syllables he can "read" after a page of print is covered | Measures pupils' eye-voice span by having them say all the words or syllables that can be recalled after a page of print is covered | Analyzes the procedures through which eye-voice span can be assessed informally | No entry | Evaluates the utility of eye-voice span measurement |
| 13 Knows that auditory-memory span can be informally assessed by asking a child to repeat a pattern of words exactly as said by the teacher | Comprehends that auditory-memory span can be informally assessed by asking a child to repeat a pattern of words exactly as said by the teacher | Measures pupils' auditory-memory span informally by asking a child to repeat a pattern of words exactly as said by the teacher | Analyzes the procedures through which auditory-memory span can be assessed informally | No entry | Evaluates the utility of measuring auditory-memory span |

SUBELEMENT III, MODULE B, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 14 Knows that reading rate norms or averages (eg. those prepared by Harris, EDL) are determined by the content, purpose, and difficulty of the material read | Comprehends that reading rate forms or averages (eg. those prepared by Harris, EDL) are determined by the content, purpose, and difficulty of the material read | | Analyzes how content, purpose, and difficulty of material read are considered in the preparation of reading rate norms | No entry | Evaluates the degree to which content, purpose, and difficulty of material read affect reading rate norms |
| 15 Knows the techniques of interpreting pupil performance data drawn from informal techniques and instruments used to assess reading achievement | Comprehends the techniques of interpreting pupil performance data drawn from informal techniques and instruments used to assess reading achievement | Employs a number of techniques to interpret pupil performance data | Analyzes the techniques of interpreting pupil performance data drawn from informal techniques and instruments used to assess reading achievement | Synthesizes the techniques of interpreting pupil performance data drawn from informal techniques and instruments used to assess reading achievement | Evaluates the utility and efficiency of various techniques of interpreting pupil performance data drawn from informal techniques and instruments used to assess reading achievement |

SUBELEMENT III: ASSESSES EACH PUPIL'S LEVELS, NEEDS, AND COMPETENCIES IN COGNITIVE AND AFFECTIVE ASPECTS OF THE COMMUNICATION PROCESS AND CAN PRESCRIBE INDIVIDUAL PROFILES OF DESIRABLE COMMUNICATION OUTCOMES.

MODULE C: KNOWS, USES, AND EVALUATES SYSTEMS FOR RECORDING PUPIL PROGRESS DATA IN COMMUNICATION

UNITS r: KNOWS, USES, AND EVALUATES SYSTEMS FOR RECORDING PUPIL PROGRESS IN READING

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 1 Knows that anecdotal records of reading readiness assessments should be based on observation of a child's personal maturation traits, level of language development, picture interpretation ability, story sense sensitivity, visual and auditory discrimination skills, memory for printed words and phrases, and understanding of page orientation | Comprehends that anecdotal records of reading readiness assessments should be based on observation of a child's personal maturation traits, level of language development, picture interpretation ability, story-sense sensitivity, visual and auditory discrimination skill, memory for printed words and phrases, and understanding of page orientation | Uses anecdotal procedures to record reading readiness assessments of a child's personal maturation traits, level of language development, picture interpretation ability, story sense sensitivity, visual and auditory discrimination skills, memory for printed words and phrases, and understanding of page orientation | Classifies anecdotal records reading readiness assessments in view of the type of information being assessed | Synthesizes information on anecdotal records of reading readiness based on observation of a child's personal maturation traits, level of language development, picture interpretation ability, story sense sensitivity, visual and auditory discrimination skills, memory for printed words and phrases, and understanding of page orientation | Evaluates anecdotal records of reading readiness assessments in view of their utility and types of information assessed |

SUBELEMENT III, MODULE C, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 2 Knows of published checklists of pupils' reading behaviors (eg. "Checklist Record of Classroom Observations of Pupils' Reading" by Strang, "The Reading Readiness Checklist" by Banham, and "Reading Skills Check List" by Barbe) | Comprehends published checklists of pupils reading behaviors (eg. "Checklist Record of Classroom Observations of Pupils' Reading" by Strang, "The Reading Readiness Checklist" by Banham and "Reading Skills Check List" by Barbe) | Uses published checklists to check pupils' reading behaviors (eg. "Checklist Record of Classroom Observations of Pupils' Reading" by Strang, "The Reading Readiness Check List" by Banham, and "Reading Skills Check List" by Barbe) | Analyzes and classifies the kinds of reading behaviors published checklists include | Synthesizes the kinds of reading behaviors published checklists include | Evaluates the completeness of checklists of reading behaviors and their utility |
| 3 Knows about a number of line, bar, picture, and circle graphs for charting pupil progress in reading (eg. SRA Student Record Booklet section on bar graphing progress, and "My Reading Design" circle graph of diversity in reading interests) | Comprehends a number of line, bar, picture, and circle graphs for charting pupil progress in reading (eg. SRA Student Record Booklet section on bar graphing progress, and "My Reading Design" circle graph of diversity in reading interests) | Uses or directs use of a number of line, bar, picture, and circle graphs for charting pupil progress in reading (eg. SRA Student Record Booklet section on bar gr graphing progress, and "My Reading Design" circle graph of diversity in reading interests) | Analyzes the kind of information about pupils' progress in reading that may be charted on a number of line, bar, picture, and circle graphs | Synthesizes the kind of information about pupils' progress in reading that may be charted on line, bar, picture, and circle graphs | Evaluates the utility of charting pupil progress on line, bar, picture, and circle graphs |

SUBELEMENT III, MODULE C, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 4 Knows a variety of records of pupils' independent reading (eg. charts, booklets, card files) as well as criteria for their content, format, and evaluation | Comprehends a variety of types of records of pupils' independent reading (eg. charts, booklets, card filed) as well as criteria for their content, format, and evaluation | Uses or directs pupil use of a variety of types of records of pupils' independent reading (eg. charts, booklets, card files) as well as criteria for their content, format, and evaluation) | Analyzes a variety of types of records of pupils' independent reading as well as criteria for their content, format, and evaluation | Synthesizes a variety of types of records of pupils' independent reading as well as criteria for their content, format, and evaluation | Evaluates criteria for the content, format, and utility of a variety of types of records of pupils' independent reading |
| 5 Knows ways in which other media (eg. films, filmstrips, records, tapes) can be used to record progress in reading | Comprehends ways in which other media (eg. films, filmstrips, records, tapes) can be used to record progress in reading | Uses or directs pupil use of other media (eg. films, filmstrips, records, tapes) to record progress in reading | Analyzes ways in which other media can be used to record pupil progress in reading | Interrelates the ways media can be used to record pupil progress in reading | Evaluates the effectiveness of using media to record pupil progress in reading |

SUBELEMENT III: ASSESSES EACH PUPIL'S LEVELS, NEEDS AND COMPETENCIES IN COGNITIVE AND AFFECTIVE ASPECTS OF THE COMMUNICATION PROCESS AND CAN PRESCRIBE INDIVIDUAL PROFILES OF DESIRABLE COMMUNICATION OUTCOMES

MODULE D: KNOWS AND EVALUATES THE ELEMENTS THAT ARE ESSENTIAL IN AN INDIVIDUALIZED INSTRUCTIONAL PRESCRIPTION IN COMMUNICATION

UNITS r: KNOWS AND EVALUATES THE ELEMENTS THAT ARE ESSENTIAL IN AN INDIVIDUALIZED INSTRUCTIONAL PRESCRIPTION IN READING

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 1 Knows how to select data about pupils that are relevant to writing a specific instructional prescription in reading (eg. background information, age, family, and past achievement | Comprehends how to select data about pupils that are relevant to writing a specific instructional prescription in reading (eg. background information, age, family, and past achievement | Selects data about pupils relevant to writing a specific instructional prescription in reading (eg. background information, age, family, and past achievement | Analyzes data about pupils relevant to writing a specific instructional prescription in reading (eg. background information, age, family, and past achievement | Interrelates data about pupils relevant to writing a specific instructional prescription in reading (eg. background, information age, family, and past achievement | Evaluates the relevancy of pupil data in writing a specific instructional prescription in reading |

SUBELEMENT III, MODULE D, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 2 Knows the possible types of specific instructional prescriptions in reading /eg. mechanics (word analysis), physiological functions (eye movement, left to right orientation), comprehension, study skills, functional linguistics, cultural-aesthetic appreciation, perceptual-conceptual development/ | Comprehends the possible types of specific instructional prescriptions in reading /eg. mechanics (word analysis), physiological functions, (eye movement, left to right orientation), comprehension, study skills, functional linguistics, cultural-aesthetic appreciation, perceptual-conceptual development/ | Writes a variety of specific instructional prescriptions in reading | Analyzes the possible types of specific instructional prescriptions in reading /eg. mechanics (word analysis), physiological functions, (eye movement, left to right orientation), comprehension, study, skills, functional linguistics, cultural-aesthetic appreciation, perceptual-conceptual development/ | Interrelates the possible types of specific instructional prescriptions in reading | Evaluates the possible types of specific instructional prescriptions in reading |
| 3 Knows that specific types of prescriptions will require varying degrees of massed or spaced practice and reinforcement | Comprehends that specific types of prescriptions will require varying degrees of massed or spaced practice and reinforcement | Writes specific prescriptions that will require varying degrees of massed or spaced practice and reinforcement | Analyzes the degrees to which instructional prescriptions include massed or spaced practice | No entry | Evaluates the desirability of massed or spaced practice in an instructional prescription |

SUBELEMENT III, MODULE D, READING: (CONTINUED)

| Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|
| 4 Knows how to write prescriptions for individual pupils in view of knowledge of teacher-prepared and commercially-prepared materials | Comprehends how to write prescriptions for individual pupils in view of knowledge of teacher-prepared and commercially-prepared materials | Writes prescriptions for individual pupils in view of knowledge of teacher-prepared and commercially prepared materials | Analyzes prescriptions for individual pupils in view of teacher-prepared and commercially-prepared materials | Synthesizes prescriptions for individual pupils in view of knowledge of teacher-prepares and commercially- prepared materials | Evaluates prescriptions for individual pupils in view of knowledge of teacher-prepared and commercially-prepared materials |
| 5 Knows that prescriptive instruction is affected by the constraints inherent in particular learning environments | Comprehends that prescriptive instruction is affected by the constraints inherent in particular learning environments | Writes appropriate prescriptions in light of environmental constraints | Analyzes the constraints inherent in particular learning environments that could affect prescriptive instruction | No entry | Evaluates the degree to which the constraints inherent in particular learning environments could affect prescriptive instruction |

# CHARACTERISTICS OF A WETEP
# COMMUNICATIONS TEACHER--
# AFFECTIVE DOMAIN

Pre-assessment Characteristics
Subelement Behaviors I, II, III, IV
Module Behaviors

## LEGEND

CODING SYSTEM
PRE = Preassessment Characteristic
ROMAN NUMERAL (I, II, III, IV) = Subelements
UPPER-CASE LETTERS = Modules

PRE-ASSESSMENT CHARACTERISTICS

## IS SENSITIVE TO AND VALUES PERSONAL COMMUNICATION COMPETENCIES AND FLEXIBILITY IN DIVERSE SOCIO-EDUCATIONAL SETTINGS

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| A Develops a sensitivity to the principles and axioms that underlie any language | Acquaints himself through further study with the principles and axioms that underlie any language | Desires to understand the principles and axioms that underlie any language | Grows in understanding of the systems and axioms that underlie any language | Non-continuing |
| B Develops a sensitivity to the reasons and social bases for varied spoken and written linguistic structures | Acquaints himself with the reasons why diverse socially-based linguistic structures have developed | Desires to understand the rationale and social bases for varied dialects | Exercises opportunities to make judgments concerning the appropriateness of varied socially-based dialects in diverse situations | Non-continuing |
| C Increases his sensitivity to the conventional written and spoken language | Enjoys using and hearing the conventional spoken and written language | Is committed to encouraging the use of the conventional written and spoken language | Non-continuing | Non-continuing |
| D Develops an alertness to the conventions of kinesics | Acquaints himself further with the conventions of kinesics by study and observation of other people | Values kinesics as a communication device | Exercises his opportunity to make judgments concerning appropriateness or effectiveness of kinesics in different communication situations | Non-continuing |

PREASSESSMENT CHARACTERISTIC: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| E Develops a sensitivity to the resources of literature past and present that are avenues for gaining social insights, personal values, satisfying leisure needs and gaining information | Finds pleasure in the resources of literature past and contemporary and uses them for gaining social insights, personal values, satisfying leisure needs and gaining information | Values the resources of literature as avenues for gaining social insights, acquiring personal values, satisfying leisure needs and gaining information | Exercises the opportunity to judge the relevance of the resources of literature as avenues for gaining social insights, acquiring personal values, satisfying leisure needs and gaining information | Characteristically judges the relevance of the resources of literature |
| F Develops a sensitivity to the resources of various media that are avenues for gaining social insights, personal values, satisfying leisure needs and gaining information | Acquaints himself through investigation with the resources of various media that are avenues for gaining social insights, personal values, satisfying leisure needs and gaining information | Values the resources of various media that are avenues for gaining social insights, acquiring personal values, satisfying leisure needs and gaining information | Exercises the opportunity to judge the relevance of various media as avenues for gaining social insights, acquiring personal values, satisfying leisure needs and gaining information | Characteristically revises judgments if necessary concerning the relevance of various media as avenues for gaining social insights, acquiring personal values, satisfying leisure needs and gaining information |
| G Develops a sensitivity to the social, economic, and philosophical trends that effect communication modes and language needs | Acquaints himself through study of past and current affairs with the social, economic and philosophical trends that effect communication modes and language needs | Is committed to increasing his understanding of social, economic, and philosophical trends that effect communication modes and language needs | Exercises the opportunity to observe social, economic, and philosophical trends that effect communication modes and language needs | Non-continuing |

SUBELEMENT I: IS SENSITIVE TO AND AWARE OF THE EVOLUTION OF THEORETICAL STRUCTURES AND THE PHYSIOLOGICAL-PSYCHOLOGICAL-SOCIOLOGICAL FACTORS THAT INFLUENCE THE COMMUNICATION PROCESS OF ELEMENTARY PUPILS

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| A Develops a sensitivity to communication as a perceptual-conceptual process, a sensory process, a linguistic process, a learned response, a developmental task, and a media for learning | Deepens his awareness of the various aspects of the communication process through study and observation | Values communication as a perceptual-conceptual process, a sensory process, a linguistic process, a learned response, a developmental task, and a media for learning | Grows in his awareness of communication processes through study and observation | Characteristically regards communication as a complex combination of processes, tasks, a media for learning |
| B Is sensitive to the psychological and sociological nature of the language learner | Becomes further acquainted with the language learner in order to learn about his psychological and sociological nature | Values the relevance of these factors to the learning capabilities of his pupils | Grows in sensitivity to the psychological and sociological nature of the language learner | Characteristically is sensitive to the psychological and sociological nature of the language learner |
| C Is aware of the physiology of each communication act | Acquaints himself further through study and observation with the physiology of each communication act | No entry | Grows in his awareness of the physiology of each communication act | Non-continuing |

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SUBELEMENT I: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| D Is sensitive to the theoretical structures that influence the development of curriculums and materials in communication | Acquaints himself further through study with the theoretical structures that influence the development of curriculums and materials in communication | Values the theoretical structures that influence the development of curriculums and materials in communication | Grows in understanding of the theoretical structures that influence the development of curriculums and materials in communication | Non-continuing |
| E Is sensitive to the effects of the following factors upon a child's language development: experience, socio-economic environment, emotional stability, physiological characteristics, motivation and the educational envirnoment | Acquaints himself further through study and observation with the effects of various aspects of the child's social, economic, psychological, physical environment upon his communication development | Desires to study and observe the effects of various aspects of the child's social, economic, psychological, and physical environment upon his communication development | Grows in understanding the effects of various aspects of the child's social, economic, psychological and physical environment upon his communication development | Characteristically is sensitive to the effects of the child's economic, psychological, and physical environment upon his communication development |

SUBELEMENT I: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| F Is aware of the relationships that exist among communication processes | Acquaints himself further with the interrelationships that exist among the communication processes | Values the interrelationships that exist among communication processes | Grows in understanding the interrelationships among communication processes | Characteristically interrelates instruction in communication processes |
| G Is aware that instruction in communication has changed over the years | Further acquaints himself through study with the ways in which instruction in communication has changed over the years and why | No entry | Grows in understanding how instruction in communication has changed over the years and why | Non-continuing |

SUBELEMENT II: IS SENSITIVE TO AND COMMITTED TO DEVELOPMENTAL PROGRAMS IN COMMUNICATION

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| A Is aware of the scope and sequence of behavioral outcomes desired when teaching each of the communication processes to elementary pupils | Acquaints himself through study and observation with specific behavioral outcomes desired when teaching each of the communication processes to elementary pupils | Is committed to helping his pupils achieve desired behaviors in communication | Exercises opportunities to judge when and if these outcomes have been achieved | Characteristically is committed to helping pupils achieve desired behaviors in communication |
| B Develops a sensitivity to the individual behaviors of pupils that reflect a readiness for levels of development in each communication process | Acquaints himself through study and observation with the individual behaviors of pupils that reflect a readiness for levels of development in each communication process | Believes in the necessity of waiting until certain behaviors appear before initiating instructioniin each communication process | Exercises opportunities to judge when to initiate appropriate activities or instruction for individual pupils in communication processes depending on readiness behavior shown | Characteristically re-evaluates the action he has chosen in the light of the pupil's performance |
| C Is sensitive to contributions of communication to growth in the academic disciplines and vice versa | Acquaints himself through study and observation with the usual correlation between pupils' development in communication and in other academic disciplines | Believes in the importance of communication development as an aid to all other learning and vice versa | Grows in noting the effects of pupils' progress in communication development on their progress in other disciplines | Characteristically notes the effects of pupils' progress in communication development on their progress in other academic disciplines |

SUBELEMENT II: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| D Is aware of the fact that curriculum guides, instructive programs, and media deal with the scope and sequence of communication development | Thoroughly acquaints himself with published curriculum guides, instructive programs and media that deal with scope and sequence of communication development | Values these materials in his teaching as aids | Exercises opportunities to judge which materials from these sources are most relevant to his particular needs in the classroom | Characteristically changes his behavior in light of new and better ideas from various published guides and curriculum material |

SUBELEMENT III: IS AWARE OF AND COMMITTED TO APPROPRIATE ASSESSMENT OF EACH PUPIL'S LEVELS, NEEDS, AND COMPETENCIES IN COGNITIVE AND AFFECTIVE ASPECTS OF EACH PROCESS OF COMMUNICATION AND CHARACTERISTICALLY PRESCRIBES INDIVIDUALIZED PROFILES OF DESIRABLE COMMUNICATION OUTCOMES

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| A Is aware of differences among standardized tests that survey competencies, assess needs and measure the probable potential of pupils in communication | Acquaints himself further with the differences among standardized tests that survey competencies, assess needs and measure the probable potential of pupils in communication | Is committed to the proper use of standardized tests that survey competencies, assess needs and measure probable potential of pupils in communication | Exercises opportunities to judge the relevance of the results of standardized tests to the needs of his pupils | Characteristically revises his judgment concerning the relevance of standardized tests in particular situations if necessary in light of new evidence |
| B Is aware of a number of informal techniques and instruments that survey competencies, assess needs and measure the probable potential of pupils in communication | Acquaints himself further through study and observation with a number of informal techniques and instruments that survey competencies, assess needs and measure the probable potential of pupils in communication | Is committed to the proper use of informal techniques and instruments that survey competencies, assess needs and measure the probable potential of pupils in communication | Exercises opportunities to judge the relevance of the results of informal techniques that survey competencies, assess needs and measure probable potential of pupils in communication | Characteristically revises his judgment concerning the adequacy of certain informal techniques in particular situations |

SUBELEMENT III: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| C Is aware of the function of various criterion tests such as go/no-go tests in selective learning branching within the scope of computer-assisted instruction in the communication | Further acquaints himself with the function of various criterion tests | Is committed to the proper use of various criterion tests | Exercises opportunities to judge the relevance of various criterion tests | Characteristically revises judgment concerning the relevance of various criterion tests in certain situations if necessary |
| D Is aware of the criteria by which language measurement instruments can be judged (eg. validity, reliability) | Acquaints himself further with the criteria by which language measurement can be judged | Is committed to the proper use of the criteria by which language measurement instruments can be judged | Exercises opportunities to examine language measurement instruments using some criteria | Characteristically examines language measurement instruments using criteria |
| E Is aware of the techniques for interpreting pupil performance data in communication | Acquaints himself further with the techniques of interpreting pupil performance data in communication | Is committed to the proper use of the techniques of interpreting pupil performance data in communication | Exercises opportunities to use proper techniques for interpreting pupil performance data in communication | Characteristically uses proper techniques for interpreting pupil performance data in communication |

SUBELEMENT III: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| F Is aware of the techniques of test construction in communication | Further acquaints himself with the techniques of test construction in communication | Desires to acquaint himself with techniques of test construction in communication | Grows in awareness of techniques of test construction in communication | Characteristically reacquaints himself with techniques of test construction in communication |
| G Is sensitive to the distinctions among evaluating, grading and reporting pupil progress in communication | Acquaints himself further with the distinction between evaluating, grading and reporting pupil progress in communication | Non-continuing | Non-continuing | Non-continuing |
| H Is aware of systems for recording pupil progress data in communication | Acquaints himself further with the systems for recording pupil progress data in communication | Values various systems for recording pupil progress data in communication | Makes judgments about the appropriateness of various systems for recording pupil progress data in communication | Characteristically evaluates various systems for recording pupil progress data in communication |
| I Appreciates that assessment and evaluation is a continuing process | Further acquaints himself with assessment and evaluation as continuing processes | Is committed to the belief that assessment and evaluation are necessary continuing processes | No entry | Characteristically assesses and evaluates pupil progress periodically |

SUBELEMENT III: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| J Is aware of the elements that are essential in an individualized instructional prescription in each communication process | Acquaints himself further through study and observation with the elements that are essential in an individualized instructional prescription for each communication process | Believes in the necessity of prescribing long range individualized profiles and sequences of desirable outcomes | Grows in awareness of the elements that are essential in an individualized instructional prescription in each communication process | Characteristically writes individualized prescriptions in each communication process that contain the essential elements |

SUBELEMENT IV: IS SENSITIVE TO THE ENVIRONMENT FOR PUPIL RECOGNITION AND USE OF COMMUNICATION PROCESSES IN A VARIETY OF SOCIAL-CULTURAL SETTINGS

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| A Is aware of teacher prescribed, initiated, and directed learning strategies and pupil prescribed, initiated, self-paced learning modes and environment for the development of communication competency | Acquaints himself further through study and observation with teacher prescribed, initiated, and directed learning strategies and pupil prescribed initiated, self-paced learning modes and environment for the development of communication competency | Is committed to finding the best combination of strategies for use in various teaching situations | Exercises opportunities to form judgments concerning the best combination of strategies for use in various teaching situations | Characteristically revises judgments if necessary in light of new evidence concerning teacher-prescribed and pupil-prescribed learning strategies |
| B Is sensitive to a variety of teaching-learning approaches such as: basal approaches, linguistically oriented approaches, experience orientated approaches, and sensory approaches | Acquaints himself further with a variety of teaching-learning approaches | Is committed to finding the most appropriate teaching-learning approaches for use in various teaching situations | Exercises opportunities to form judgments concerning the best teaching-learning approaches to use in various situations | Characteristically revises judgments if necessary in light of new evidence concerning the most appropriate teaching-learning approaches to use in various situations |

SUBELEMENT IV: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| C Is aware of a wide variety of communication instructional materials that facilitate a pupil's growth in communication competencies including: basal materials, trade books, self-directive-corrective materials, programmed and computer-assisted instruction, workbooks, and audio-visual-kinesthetic resources | Acquaints himself further with a wide variety of language arts instructional materials that facilitate a pupil's growth in communication competencies | Is committed to finding the most appropriate language arts instructional materials to facilitate pupils' growth in communication competencies | Exercises opportunities to form judgments concerning the most appropriate language arts instructional materials to facilitate pupils' growth in communication competencies | Characteristically revises his judgments if necessary in light of new evidence concerning the most appropriate language arts instructional materials to facilitate pupils' growth in communication competency |
| D Is aware of the principles for the preparation of a variety of teacher and/or pupil made learning materials | Acquaints himself further with the principles for preparation of a variety of teacher and pupil made learning materials | Believes in the necessity of using a variety of teacher and pupil made learning materials | Exercises opportunities to judge when teacher and pupil made learning materials may most appropriately be used | Characteristically revises his judgments if necessary in light of new evidence concerning the use of teacher and pupil made learning materials |

SUBELEMENT IV: (CONTINUED)

| Receiving | Responding | Valuing | Organization | Characterization |
|---|---|---|---|---|
| E Is aware of the role and the interrelationships among the roles of the professional and para-professional staff who influence communication learning | Acquaints himself further with the role and interrelationships among the roles of the professional and para-professional staff who influence communication | Values the role and interrelationships among the roles of the professional and para-professional staff who influence learning communication | Exercises opportunities to relate to the professional and para-professional staff who influence communication learning | Characteristically desires to relate to the professional and para-professional staff who influence communication learning |
| F Is aware of a variety of school organizational plans and school plants which influence communication learning activities | Further acquaints himself with a variety of school organizational plans and school plants which influence communication learning activities | Values various school organizational plans and school plants through or in which communication learning is facilitated | Exercises opportunities to observe and study various organizational plans and school plants through or in which communication learning is facilitated | Characteristically desires to study school organizational plans or plants through or in which communication learning is facilitated |

# MATHEMATICS EDUCATION

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# MATHEMATICS EDUCATION

Abstract. WETEP Mathematics Education derives its nature from the intersection or interaction of a complex of things which may be grouped in these three categories:

A. The discipline of mathematics
B. Curriculum and Instruction (including clinical/laboratory experiences)
C. Related disciplines (such as philosophy, psychology, sociology, history) and their mediating analogs (such as educational philosophy, developmental and educational psychology, educational sociology, history of education)

Within the context of a WETEP system, the Mathematics Education Element will be designed to facilitate a teacher's development of five broad characteristics which form the basis for these illustrative mathematics education subelements and modules:

1. Background in the discipline of mathematics
2. Rationale and objectives for an elementary school mathematics program (ESMP)
    A. ESMPs in historical perspective
    B. Rationale for contemporary ESMPs
    C. Broad objectives of contemporary ESMPs
3. ESMP mathematical content and related abilities
    A. Nature and scope
    B. Sequential organization
4. ESMP instructional strategies, materials, and media
    A. Utilization of research findings
    B. Utilization of appropriate instructional strategies
    C. Utilization of appropriate materials
    D. Utilization of appropriate media
5. Evaluation of outcomes of an ESMP
    A. Role of standardized tests
    B. Other evaluation instruments and techniques
    C. Diagnosis and prescription

For each of the subelements 2-5 and its modules, illustrative objectives have been formulated in terms which explicitly or implicitly have behavioral connotations. Detailed implementation plans have been suggested for two such objectives, to illustrate the possible use of various experiences, modes of presentation, media, and levels of attainment in an attempt to individualize students' work in mathematics education.

The subelements and modules of the Mathematics Education Element are not independent entities, but overlapping--both across subelements and across modules within a particular subelement. Thus, a system is envisioned which will permit considerable flexibility in a student's path of progress within the Mathematics Education Element.

## General Considerations

Mathematics education is an essential aspect of the preparation of all WETEP teachers, since

(a) a program of instruction in mathematics is an integral part of the WETEP conception of a dynamic, comprehensive elementary school curriculum in which

(b) every WETEP teacher will contribute in some way and in some degree to the effectiveness of that program of mathematics instruction.

WETEP mathematics education derives its nature from the intersection or interaction of a complex of things which may be grouped in three categories, as illustrated by Figure 1:

A. The Discipline of Mathematics,

B. Curriculum and Instruction (including clinical/laboratory experiences), and

C. Related Disciplines (such as philosophy, psychology, sociology, history), and their mediating analogs (such as educational philosophy, developmental and educational psychology, educational sociology, history of education).

Each of these three broad categories of things is reflected within the WETEP mathematics education element--either directly as an identified subelement, or indirectly through explicit or implied links with other elements of the complete WETEP system.

## Particular Characteristics of a WETEP Teacher

Within the context of a WETEP system, the mathematics education element will be designed to facilitate a teacher's development of five broad characteristics:

1. A WETEP teacher has a breadth and depth of background in relevant aspects of the discipline of mathematics that will enable him to be mathematically competent, confident, and articulate in his participation in the planning and implementation of an elementary school mathematics program.

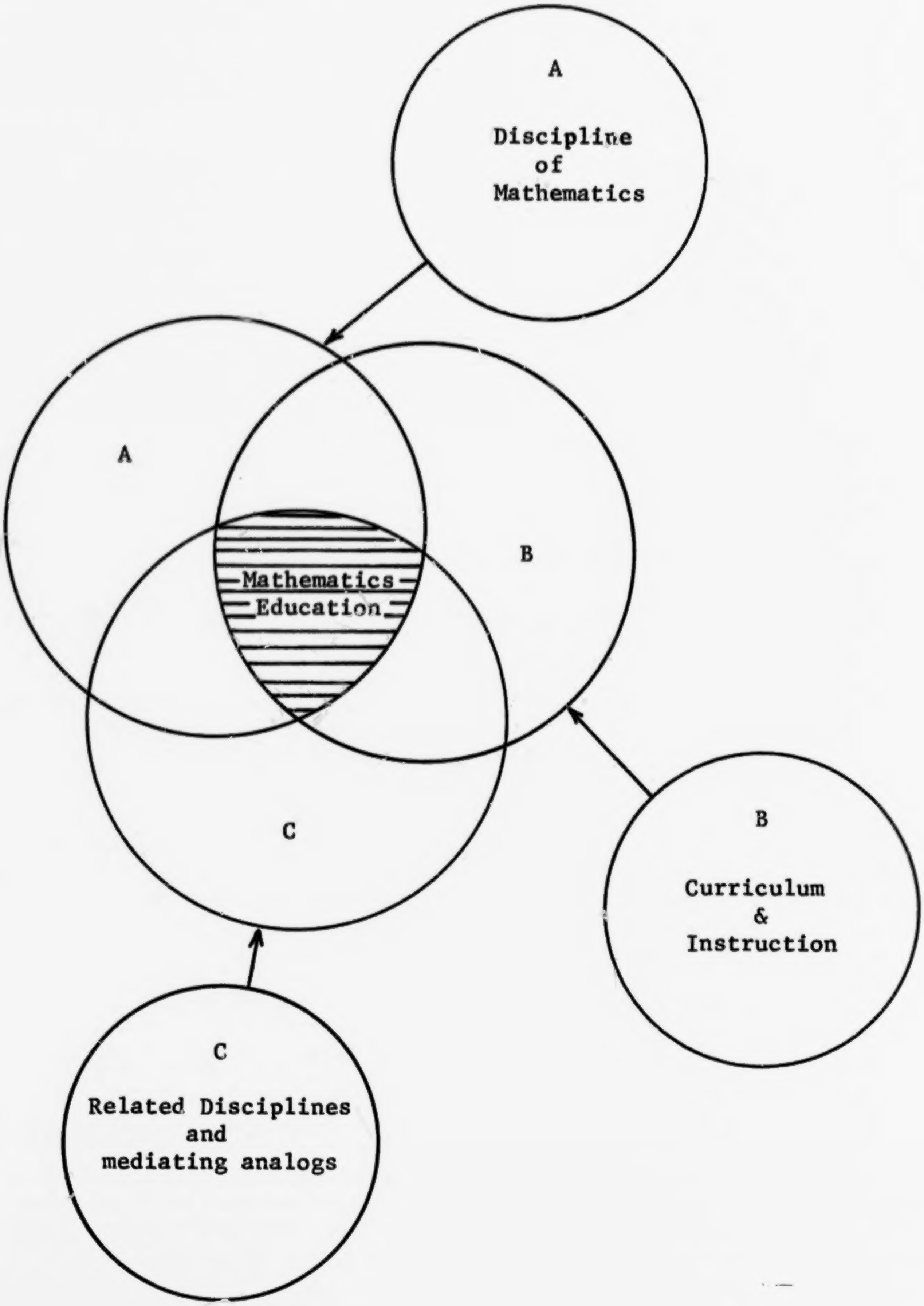
A
Discipline
of
Mathematics
A
B
Mathematics
Education
C
B
Curriculum
&
Instruction
C
Related Disciplines
and
mediating analogs

Figure 1. A view of the nature of WETEP mathematics education

2. A WETEP teacher has a defensible rationale for the inclusion of a program of mathematics instruction as an integral part of a comprehensive elementary school curriculum, and he is cognizant of desirable program objectives that are logical consequences of this rationale.

3. A WETEP teacher senses mathematical content (its nature, scope, and sequential organization) and related abilities which may be appropriate in relation to program objectives--generally, and for particular pupils.

4. A WETEP teacher is familiar with instructional strategies, materials, and media which may be appropriate in relation to the attainment of objectives of an elementary school mathematics program--in general, and with respect to particular pupils.

5. A WETEP teacher is knowledgeable regarding effective means (techniques, instruments, etc.) that may be used to evaluate the outcomes of an elementary school mathematics program in relation to program objectives--generally, and for particular pupils.

Each of these five characteristics of a WETEP teacher will serve as the basis for a subelement of the WETEP mathematics education element. These five subelements have been identified in Figure 2, which illustrates their interrelatedness and the relation of the WETEP mathematics education element to the complex of other WETEP elements.

## Subelements of the WETEP Mathematics Education Element

As identified in Figure 2, the subelements of the WETEP mathematics education element are:

1. Background in the Discipline of Mathematics
2. Rationale and Objectives for an ESMP* (or ESMPs)
3. ESMP* Mathematical Content and Related Abilities
4. ESMP* Instructional Strategies, Materials, and Media
5. Evaluation of Outcomes of an ESMP* (or ESMPs)

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* Elementary School Mathematics Program(s)

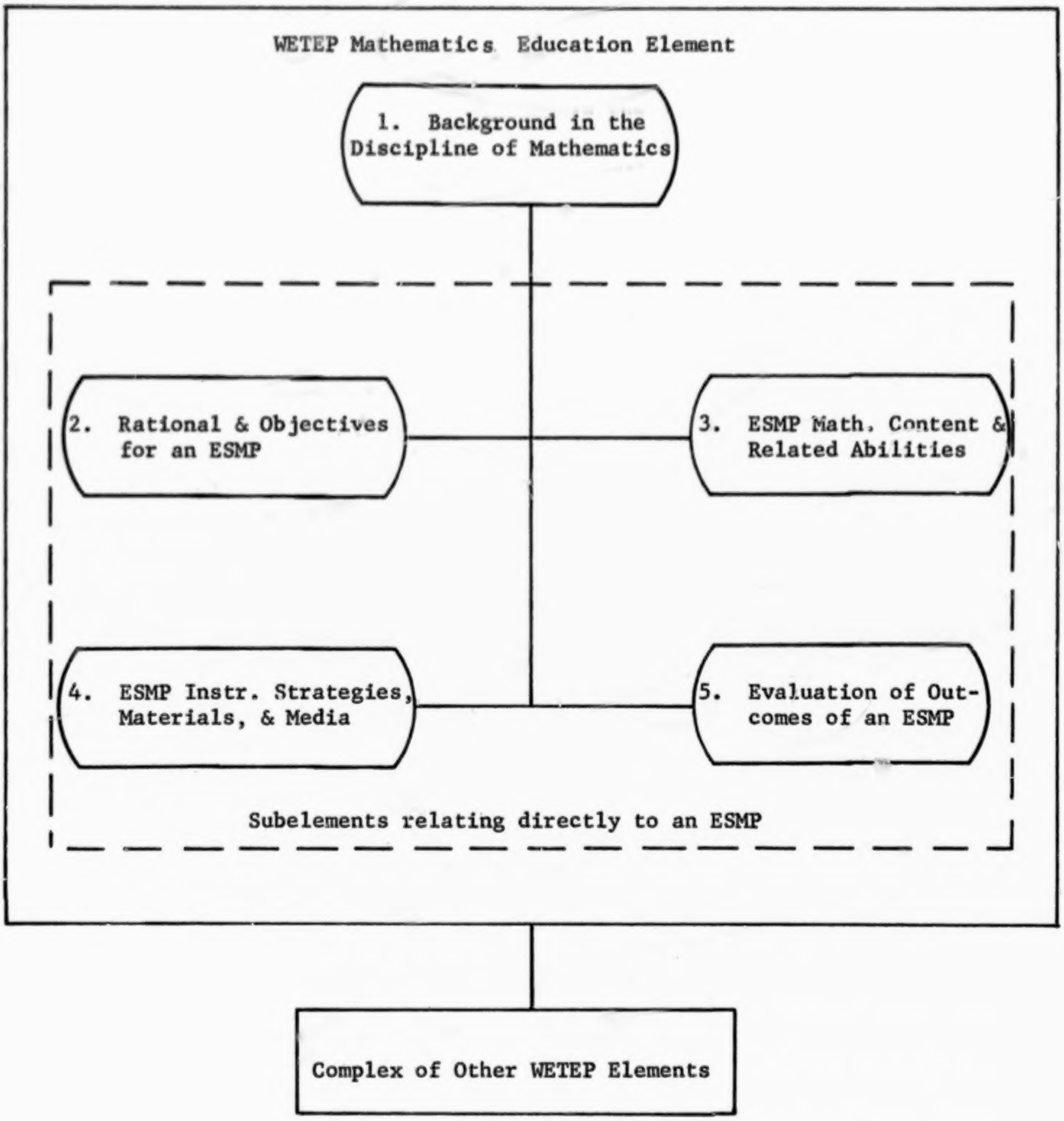
WETEP Mathematics Education Element
1. Background in the Discipline of Mathematics
2. Rational & Objectives for an ESMP
3. ESMP Math. Content & Related Abilities
4. ESMP Instr. Strategies, Materials, & Media
5. Evaluation of Outcomes of an ESMP
Subelements relating directly to an ESMP
Complex of Other WETEP Elements

Figure 2. The WETEP mathematics education element: its subelements and its relation to other WETEP elements

### Illustrative Objectives for Subelement 2
### of the WETEP Mathematics Education Element

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| **A** | 2.1011<br>Is able to identify historical stages in the development of elementary school mathematics programs. | 2.2011<br>Is able to sense ways in which various forces which over time, exert influences on the nature of elementary school mathematics programs. | 2.3011<br>Is able to discuss contemporary elementary school mathematics programs in light of the historical development of mathematics programs for elementary school children. | | | |
| **B** | 2.1021<br>Is able to cite reasons for the inclusion of mathematics in comprehensive elementary school curriculum. | 2.2021<br>Is able to sense the role of mathematics and mathematics education in contemporary culture in general. | 2.3021<br>Is able to indicate how mathematics fulfills particular needs in contemporary society. | 2.4021<br>Is able to interpret various contemporary elementary school mathematics programs in relation to underlying philosophy and rationale. | 2.5021<br>Is able to formulate a personal philosophy and rationale for the inclusion of mathematics in a contemporary elementary school program. | 2.6021<br>Is able to assess the significance of a current issue in mathematics education in relation to one's personal philosophy and rationale. |
| | | 2.2022<br>Is able to sense how various disciplines (e.g., mathematics, science, etc.) may exert forces which influence the nature of contemporary elementary school mathematics programs. | 2.3022<br>Is able to discuss the role of mathematics in a comprehensive elementary school curriculum, and the reciprocal relation between mathematics and other curricular areas. | | | |
| **C** | 2.1031<br>Is able to cite broad objectives of contemporary elementary school mathematics programs. | | | 2.4031<br>Is able to relate broad objectives of a contemporary elementary school mathematics program to underlying philosophy and rationale. | 2.5031<br>Is able to formulate broad objectives of contemporary elementary school mathematics programs that grow out of a personal philosophy and rationale. | 2.6031<br>Is able to assess the validity of broad objectives of a contemporary elementary school mathematics program in relation to avowed philosophy and rationale. |

## Illustrative Objectives for Subelement 3
## of the WETEP Mathematics Education Element

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| A | 3.1011<br>Is able to summarize the nature and range of content and abilities commonly included in contemporary elementary school mathematics programs. | 3.2011<br>Is able to interpret the objectives of a contemporary elementary school mathematics program in terms of the nature and scope of content and abilities included in that program. | | 3.4011<br>Is able to determine the nature and scope of content and abilities embraced by a particular contemporary elementary school mathematics program. | 3.5011<br>Is able to suggest the nature and scope of content and abilities that might be included in a contemporary elementary school mathematics program to achieve specified objectives of that program. | 3.6011<br>Is able to assess the validity of the nature and scope of content and abilities included in a contemporary elementary school mathematics program. |
| | 3.1012<br>Has knowledge of the essential mathematical concepts, processes, and skills to be learned. | 3.2012<br>Can recognize competencies desired, conceptual hierarchies, and operating rules in each of the content areas of an ESMP. | | 3.4012<br>Given several ESMPs, can identify differences and similarities in their treatment of a specific mathematic concept. | 3.5012<br>Can formulate a description of the mathematical content of an ESMP appropriate for a particular group of learners. | |
| | | | | 3.4013<br>Can interpret in a comparative manner two elementary school mathematics programs which differ in mathematical approach. | | |
| | | | | 3.4014<br>Is able to analyze an ESMP and distinguish between those program segments which lead to concept formation and those related to skills development. | | |

## Illustrative Objectives for Subelement 3
## of the WETEP Mathematics Education Element

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| B | 3.1021<br>Has knowledge of the principles by which mathematics content can be organized for learners. | 3.2021<br>Understands "spiral teaching-learning," "block teaching-learning," and other ideas used in organizing an ESMP. | 3.3021<br>Is able to organize an appropriate set of program materials to achieve a particular set of objectives | 3.4021<br>Is able to identify the organizing structures of a given mathematics program. | 3.5021<br>Is able to design a complete program out of parts of several. | 3.6021<br>Is able to assess the appropriateness of a given program for a specific group of children. |
| | | 3.2022<br>Understands how a series of excerpts taken from an ESMP can be ordered in an appropriate sequence. | | 3.4022<br>Is able to analyze interrelatedness of the separate parts of a given program. | 3.5022<br>Is able to supplement the sequence of one program with the appropriate elements of another. | |
| | | | | 3.4023<br>Is able to analyze the progression of the development of content ideas in a given program. | 3.5023<br>Is able to create program material for a unit which fits appropriately into a larger sequence. | |
| | | | | 3.4024<br>Given a major concept, is able to sketch its development and application throughout a given ESMP. | 3.5024<br>Is able to state behavioral objectives which a learner must have attained prior to study of a given concept or skill in a new unit of work. | |

Illustrative Objectives for Subelement 4
of the WETEP Mathematics Education Element

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| **A** | 4.1011<br>Has knowledge of research and studies which have implications for instruction in mathematics. | 4.2011<br>Understands the extent to which research results contribute to decision making in classroom instruction in mathematics. | 4.3011<br>Can translate the results of research into classroom practices and techniques. | | 4.5011<br>Can assess the interrelatedness of the findings of several research studies and their implications for classroom instruction. | 4.6011<br>Can assess the results of the application of research findings in classroom practice. |
| **B** | 4.1021<br>Can identify objectives associated with a given segment of an ESMP. | 4.2021<br>Understands how the achievement of specific objectives by the learner are related to the learner's further mathematical development. | 4.3021<br>Is able to develop a set of behavioral objectives appropriate for a specific lesson in a given ESMP. | 4.4021<br>Is able to analyze the instructional objectives of a particular strand at various levels in a given ESMP. | | 4.6021<br>Is able to evaluate the stated objectives for a given lesson within a segment of an ESMP. |
| | | | 4.3022<br>Is able to plan a series of lessons from a given ESMP. | | | 4.6022<br>Is able to formulate statements indicating the minimal acceptable level of performance for a set of instructional objectives in a given ESMP. |

Illustrative Objectives for Subelement 4
of the WETEP Mathematics Education Element

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| B | 4.1023<br>Has knowledge of a variety of instructional strategies appropriate for developing a given objective in mathematics. | 4.2023<br>Understands how a variety of strategies can be associated with a given instructional objective in mathematics. | 4.3023<br>Can apply knowledge of a variety of teaching strategies, in implementing instructional objectives in mathematics. | 4.4023<br>Can recognize the appropriateness of teaching strategies selected for the implementing of given instructional objectives in mathematics. | 4.5023<br>Is able to modify his teaching strategies in light of his analysis of student problems in attaining an instructional objective. | 4.6023<br>Is able to apply appropriate criteria to his selection of various teaching strategies and to evaluate their effectiveness in implementation of a given mathematical objective. |
| | | 4.2024<br>Can provide evidence which supports the strategies he would use in a specific mathematics lesson or to achieve a specific objective. | | | 4.5024<br>Is able to predict, to some extent, the outcome of a teaching strategy used in a particular situation. | |
| | 4.1025<br>Knows a variety of learning experiences appropriate for individual pupil growth in mathematics. | 4.2025<br>Understands a variety of instructional strategies appropriate to the strengths and weaknesses of individual pupils. | 4.3025<br>Can utilize a varied set of learning activities according to the characteristics of individual students. | 4.4025<br>Can analyze pupil learning styles and select appropriate strategies for the attainment of a given mathematical objective. | 4.5025<br>Can utilize knowledge in child growth and development and in learning the organization and selection of instructional strategies in mathematics. | 4.6025<br>Can assess the results of the use of specific strategies with given individual pupils. |
| | | | 4.3026<br>Can help pupils develop an understanding of purposes of mathematics instruction in the elementary school. | | | |

## Illustrative Objectives for Subelement 4 of the WETEP Mathematics Education Element

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| C | 4.1031<br>Knows a variety of manipulative materials instructional use in mathematics. | 4.2031<br>Understands the appropriateness of a number of manipulative materials for use in a variety of instructional situations. | 4.3031<br>Is able to utilize a variety of manipulative materials in the development of a concept with a particular group of pupils. | 4.4031<br>Can analyze the uses and limitations of various materials for instruction in mathematics in a given situation. | 4.5031<br>Can create manipulative materials appropriate to the objectives within each of the various content strands. | 4.6031<br>Can assess or evaluate the use of various materials in a given situation in light of children's needs and the instructional objectives. |
| | | 4.2032<br>Understands how a number of aids can be used appropriately for learning a given segment of content. | 4.3032<br>Can utilize different instructional materials appropriately for different groups of children. | | | |
| | | 4.2033<br>Understands how multisensory materials can be appropriately used in association with a given teaching strategy. | 4.3033<br>Can utilize a variety of materials where appropriate in the teaching of a lesson or unit in mathematics. | | | |
| D | 4.1041<br>Knows a wide variety of media available for instruction in mathematics. | 4.2041<br>Can relate a variety of media appropriate to a variety of instructional objectives in an ESMP. | 4.3041<br>Can select appropriate media to be used with various programs and pupils. | 4.4041<br>Can analyze the appropriateness of specific media to particular learning situations. | 4.5041<br>Can design media which can be created by a teacher for classroom use. | 4.6041<br>Can evaluate the effectiveness of specific media in achieving the purposes of instruction. |

Illustrative Objectives for Subelement 5
of the WETEP Mathematics Education Element

| Module | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| A | 5.1011<br>Can list a number of standardized test materials for elementary school mathematics. | 5.2011<br>Understands how to match a set of standardized test materials for a given ESMP. | 5.3011<br>Can relate the results of a given standardized test instrument in light of its meaning for an individual or a group. | 5.4011<br>Can analyze a standardized test or an item in terms of its meaning for individual learners or in terms of specific behavioral objectives. | 5.5011<br>Can select a set of items from a large pool of items to form a comprehensive testing program congruent to the objectives of a given ESMP. | 5.6011<br>Is able to judge the significance of the various statistical information regarding standardized tests for decision making in light of a given objective. |
| B | 5.1021<br>Knows a number of techniques for measuring pupil growth and understanding in mathematics. | 5.2021<br>Can relate assessment items to specific objectives for elementary school mathematics instruction. | 5.3021<br>Can construct test items and sets of items appropriate for the measurement of outcomes related to specific objectives. | 5.4021<br>Can analyze a teacher made test in terms of its appropriateness to specific objectives. | 5.5021<br>Can organize an assessment procedure to determine each student's status at the beginning of a learning sequence and each student's rate of progress toward the attainment of the desired behaviors. | 5.6021<br>Is able to assess the strengths and weaknesses of a given evaluation program. |
| C | 5.1031<br>Knows the common errors pupils make in computation and some common pupil misunderstandings of concepts. | 5.2031<br>Is able to understand how errors in computational skills may be related to nonattainment of concepts which are the basis for the skills. | 5.3031<br>Is able to assist individual learners in making appropriate interpretations of assessment results in terms of their own accomplishments and needs. | 5.4031<br>Is able to analyze the extent to which individual learners appropriately interpret personal assessment information. | 5.5031<br>Is able to analyze the errors and misconceptions pupils exhibit through a sequence of responses and to determine basic instructional needs. | |

The dashed rectangular boundary around subelements 2, 3, 4, and 5 of Figure 2 is intended to convey the close association of these four subelements as ones that deal directly with elementary school mathematics programs.

The first subelement, Background in the Discipline of Mathematics, is a crucial part of the complete mathematics education element, as by the solid rectangular boundary around the five subelements. Although this first subelement does not deal directly with any ESMP per se, the other subelements of the mathematics education element would be vacuous without it.

The WETEP mathematics education element is not self-sufficient, however. Other elements of the comprehensive WETEP system must be linked with it, and it with them. This fact is suggested by the connection with the rectangular box identified in Figure 2 as "Complex of Other WETEP Elements." Particular instances of such links will be made explicit, or will be implied, in later sections of this document.

Each of the five subelements of the WETEP mathematics education element now will be considered in some detail.

## Subelement 1. Background in the Discipline of Mathematics

"A WETEP teacher has a breadth and depth of background in relevant aspects of the discipline of mathematics that will enable him to be mathematically competent, confident, and articulate in his participation in the planning and implementation of an elementary school mathematics program."

A conceptual framework has been designed to serve a two-fold purpose:

(a) as a basis for the eventual detailed outline and development of this strategic subelement, and

(b) as a basis for relating each of the other four subelements uniquely to the discipline of mathematics.

The nature of this framework is illustrated by Figure 3, and is organized around four aspects of learning associated with the discipline of mathematics.

Associated with $\overline{WX}$ of Figure 3 are several powerful concepts which permeate the whole of mathematics. These are the concepts of set, relation, operation, and function.

Each of these concepts may be used to advantage in connection with each of the areas of mathematical content associated with $\overline{WZ}$: arithmetic and theory of numbers, algebra, geometry, measurement, and probability and statistics. These are not the only areas of mathematical content that may be identified, but they are judged to be the most significant ones in relation to the framework's two-fold purpose.

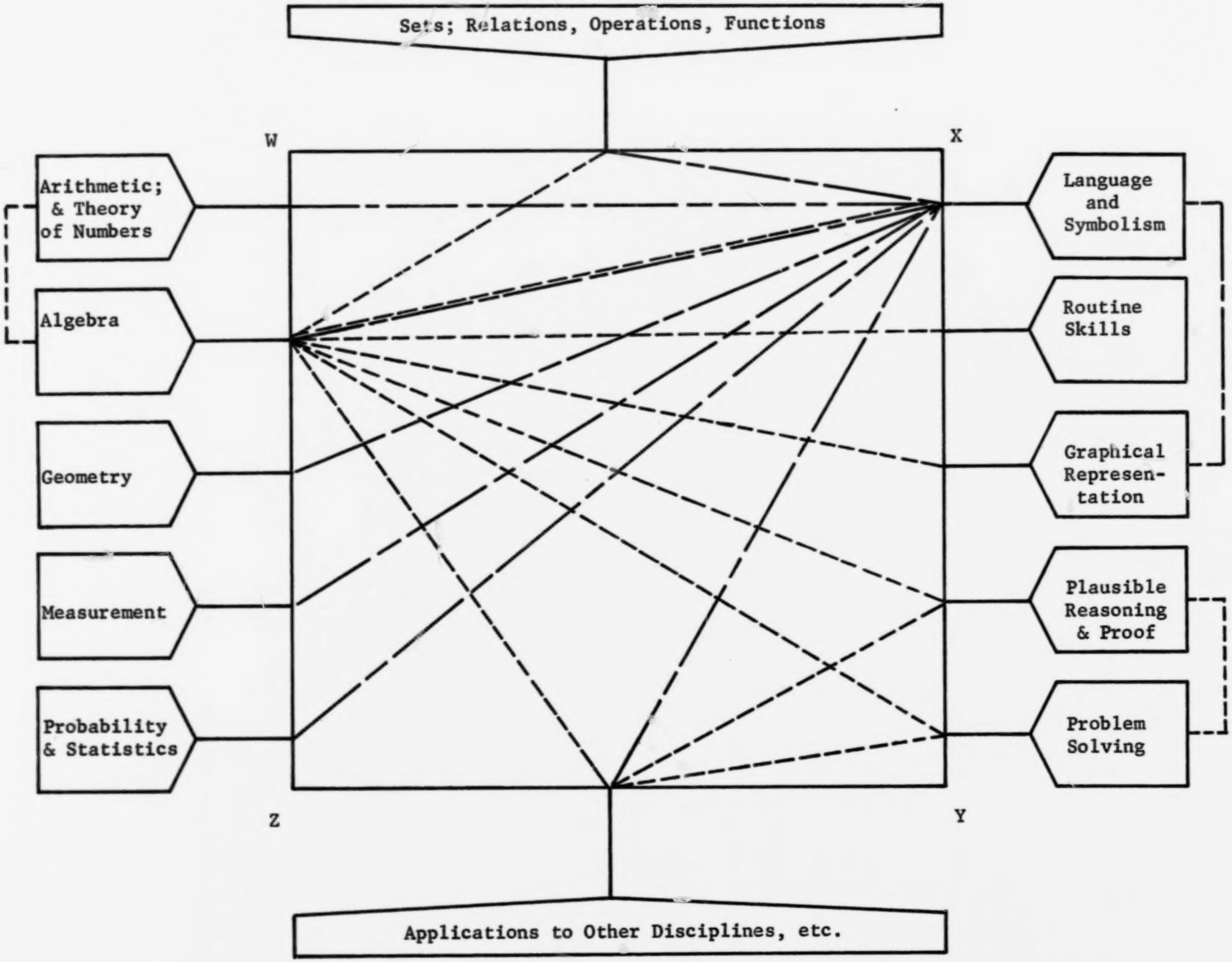
Sets; Relations, Operations, Functions
W
X
Z
Y
Arithmetic; & Theory of Numbers
Algebra
Geometry
Measurement
Probability & Statistics
Language and Symbolism
Routine Skills
Graphical Representation
Plausible Reasoning & Proof
Problem Solving
Applications to Other Disciplines, etc.

Figure 3. Selected aspects of learning associated with the discipline of mathematics, and a suggestion of some of their interrelationships

But any consideration of the $\overline{WX}$ and $\overline{WZ}$ components of this framework also involves some or all of the things associated with $\overline{XY}$ of Figure 3: language and symbolism, routine skills, graphical representation, plausible reasoning and proof, and problem solving.

The fourth component, $\overline{YZ}$, of Figure 3 relates to the application of mathematics to other disciplines, and the like. Such applications utilize aspects of each of the other three components of the framework: $\overline{WX}$, $\overline{WZ}$, and $\overline{XY}$.

The dashed "lines" appearing in Figure 3 are intended to suggest only a few of the numerous inter- and intra-relationships inherent within framework WXYZ, its component and sub-components.

The WETEP system is designed to provide students with opportunities for considerable flexibility in their work within and among the subelements of the mathematics education element.

For instance, a student may elect (or be advised) to complete his study of subelement 1 before working at all with any of the other four subelements of the mathematics education element. If this is the case, he may or may not exit from the element (with a subsequent re-entry in mind) either before completing subelement 1, or after completing subelement 1 and before proceeding to one or another of the remaining four subelements.

On the other hand, a student may elect (or be advised) to intersperse his prescribed study of subelement 1 with work on one or another of the remaining four subelements. As before, a student may exit from and re-enter subelement 1, or the element itself, at any reasonable time.

Opportunities for this degree of flexibility are explicit in Figure 4, which represents a skeleton schema of the WETEP mathematics education element and its subelements. This system makes it possible for a student to draw upon the resources of study within subelement 1 at any time that this may be advantageous in connection with his progress through the mathematics education element.

The ultimate development of subelement 1 will be based upon modules and objectives analogous to the ones now to be illustrated for subelements 2, 3, 4, and 5 of the WETEP mathematics education element.

Subelement 2. Rationale and Objectives for an ESMP or (ESMPs)

"A WETEP teacher has a defensible rationale for the inclusion of a program of mathematics instruction as an integral part of a comprehensive elementary school curriculum, and he is cognizant of desirable program objectives that are logical consequences of this rationale."

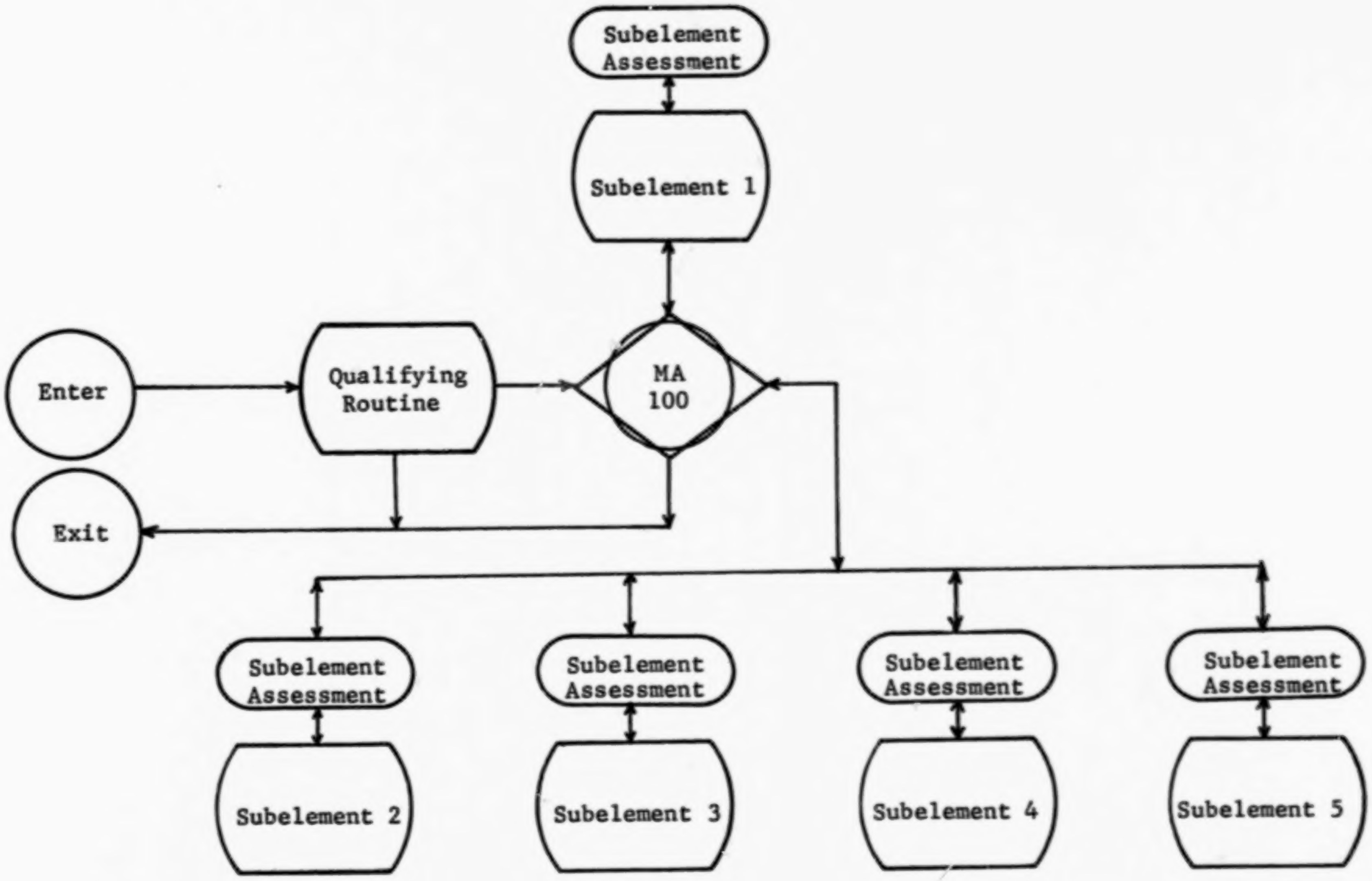
Subelement Assessment
Subelement 1
Enter
Qualifying Routine
MA 100
Exit
Subelement Assessment
Subelement 2
Subelement Assessment
Subelement 3
Subelement Assessment
Subelement 4
Subelement Assessment
Subelement 5

Figure 4. A skeleton of the WETEP mathematics education element and its subelements

This subelement may be organized around three modules:

A. ESMPs in Historical Perspective

B. Rationale for Contemporary ESMPs

C. Broad Objectives of Contemporary ESMPs

Although modules B and C relate most directly to the specified characteristic of a WETEP teacher, module A contributes a desirable background for a clearer understanding of the contemporary scene.

The contemplated nature of each of these modules may be glimpsed from the following set of illustrative objectives which span the six classes or categories of the Taxonomy of Educational Objectives: Handbook I, Cognitive Domain*: (1) Knowledge, (2) Comprehension, (3) Application, (4) Analysis, (5) Synthesis, and (6) Evaluation. Each of these categories is represented by several illustrative objectives within subelement 2 as a whole, but not within each module of the subelement.

Illustrative objectives for each of the three modules (A, B, C) of subelement 2 may be identified by reading the following chart horizontally. Illustrative objectives associated with each category of the Bloom Taxonomy may be identified by reading the following chart vertically.

There is a sense in which subelement 2 is a logical predecessor of subelements 3, 4, and 5, and therefore would be encountered by students before these other three subelements. But there also is a sense in which the full import of subelement 2 may emerge from work with subelements 3, 4, and 5. The WETEP mathematics education element is sufficiently flexible, as a system, to permit either of these approaches to subelement 2. This is conveyed, hopefully, by Figure 4 of this document.

No attempt is made at this time to identify sets of subelement 2 objectives that may be associated with particular levels of preparation in mathematics education, such as preservice preparation, further inservice preparation, mathematics education specialists' preparation, and others. The determination of such subsets of objectives, not only for subelement 2 but for all subelements of the WETEP mathematics education element, is deferred until a later stage in the development and implementation of the Wisconsin Elementary Teacher Education Project, which will follow the planning embraced by this document.

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* Benjamin S. Bloom, editor. (New York: David McKay Co., Inc., 1956)

### Subelement 3

"A WETEP teacher senses mathematical content (its nature, scope, and sequential organization) and related abilities which may be appropriate in relation to program objectives--generally, and for particular pupils."

This subelement may be organized around two modules:

A. Nature and Scope

B. Sequential Organization

The contemplated nature of each of these modules may be glimpsed from the following set of illustrative objectives which span the six classes or categories of the Bloom Taxonomy.

Illustrative objectives for each of the two modules of subelement 3 may be identified by reading the following chart horizontally. Illustrative objectives associated with each category of the Bloom Taxonomy may be identified by reading the chart vertically.

The framework suggested for the development of subelement 1 of the WETEP mathematics education element can be helpful in interpreting the illustrative objectives identified for subelement 3. These may be viewed in relation to the same underlying concepts associated with $\overline{WX}$ of Figure 3, to the same areas of mathematics associated with $\overline{WX}$ of Figure 3, and to uses of the same things associated with $\overline{XY}$ of Figure 3.

### Subelement 4

"A WETEP teacher is familiar with instructional strategies, materials, and media which may be appropriate in relation to the attainment of objectives of an elementary school mathematics program--in general, and with respect to particular pupils."

This subelement may be organized around four modules:

A. Utilization of Research Findings

B. Utilization of Appropriate Instructional Strategies

C. Utilization of Appropriate Materials

D. Utilization of Appropriate Media

Clearly, these modules are not disjoint or mutually exclusive. They afford a helpful basis, however, in categorizing objectives in relation to emphasis.

The contemplated nature of each of the four modules may be sensed from the following set of illustrative objectives which span the six classes of the Bloom Taxonomy. All objectives are intended to convey behavioral connotations, although some statements convey this intention more explicitly than do others.

Illustrative objectives for each of the four modules of subelement 4 may be identified by reading the following chart horizontially. Illustrative objectives associated with each category of the Bloom Taxonomy may be identified by reading the chart vertically.

### Subelement 5

"A WETEP teacher is knowledgeable regarding effective means (techniques, instruments, etc.) that may be used to evaluate the outcomes of an elementary school mathematics program in relation to program objectives--generally, and for particular pupils."

This subelement may be organized around three modules:

A. Role of Standardized Tests

B. Other Evaluation Instruments and Techniques

C. Diagnosis and Prescription

The contemplated nature of each of these three modules may be glimpsed from the following set of illustrative objectives which span the six categories of the Bloom Taxonomy. The chart may be interpreted in a manner similar to the charts for subelements 2, 3, and 4.

## Model for the Mathematics Education Element

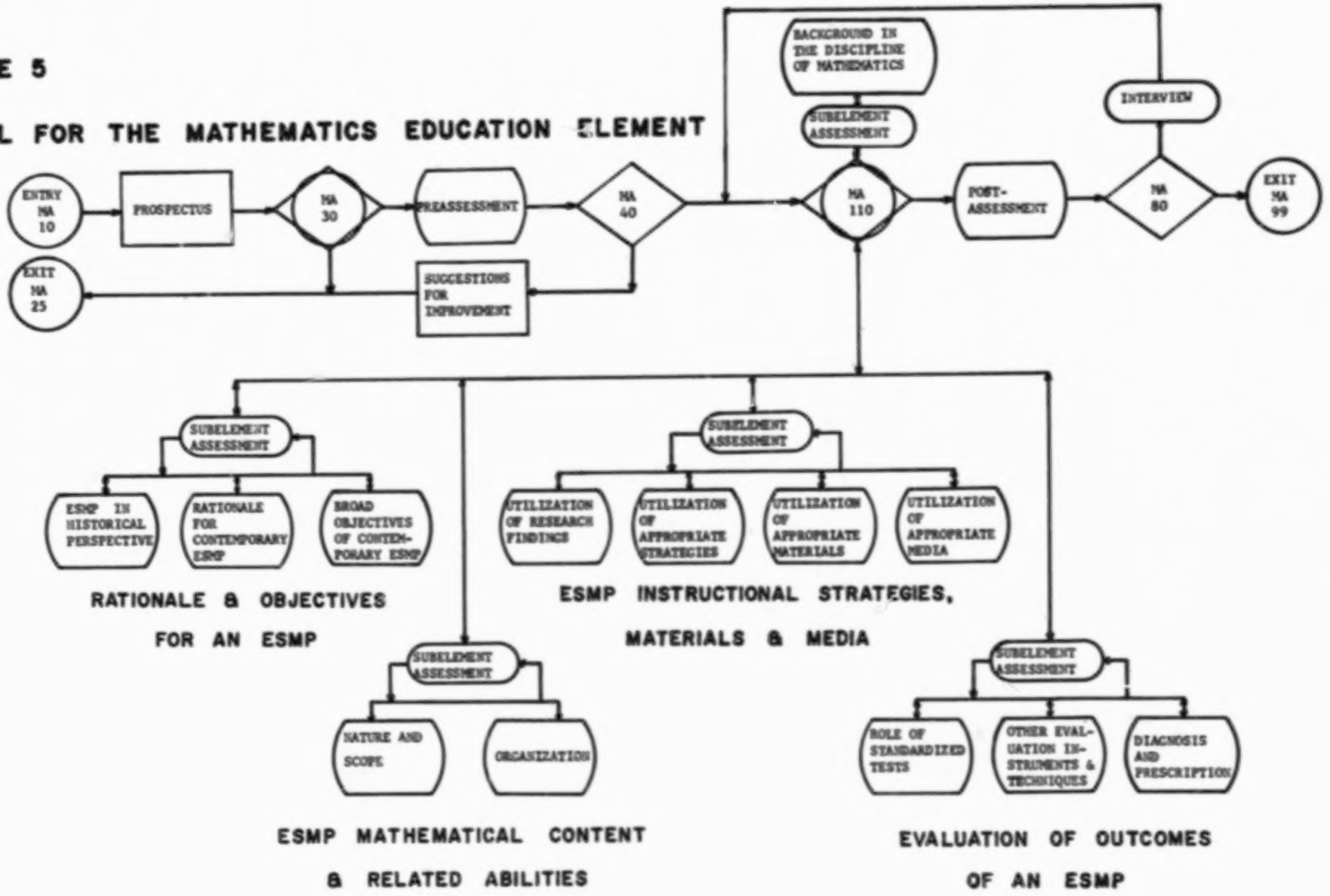
The relationship among subelements and modules of the WETEP mathematics education element is illustrated by Figure 5, which is an extension of Figure 4 presented earlier in this document. The previously described flexibility to be afforded students in their work within and among the subelements and modules of the mathematics education element is exemplified in Figure 5.

### Implementing Progress Toward Objectives

A more detailed indication of how progress toward the attainment of a particular objective may be implemented is illustrated by Figure 6 and the accompanying guide to Figure 6, using the following specimen objective from the mathematics education element:

FIGURE 5

MODEL FOR THE MATHEMATICS EDUCATION ELEMENT


ENTRY MA 10
PROSPECTUS
MA 30
PREASSESSMENT
MA 40
SUGGESTIONS FOR IMPROVEMENT
EXIT MA 25
BACKGROUND IN THE DISCIPLINE OF MATHEMATICS
SUBELEMENT ASSESSMENT
MA 110
POST-ASSESSMENT
MA 80
INTERVIEW
EXIT MA 99
SUBELEMENT ASSESSMENT
ESMP IN HISTORICAL PERSPECTIVE
RATIONALE FOR CONTEMPORARY ESMP
BROAD OBJECTIVES OF CONTEMPORARY ESMP
RATIONALE & OBJECTIVES FOR AN ESMP
SUBELEMENT ASSESSMENT
NATURE AND SCOPE
ORGANIZATION
ESMP MATHEMATICAL CONTENT & RELATED ABILITIES
SUBELEMENT ASSESSMENT
UTILIZATION OF RESEARCH FINDINGS
UTILIZATION OF APPROPRIATE STRATEGIES
UTILIZATION OF APPROPRIATE MATERIALS
UTILIZATION OF APPROPRIATE MEDIA
ESMP INSTRUCTIONAL STRATEGIES, MATERIALS & MEDIA
SUBELEMENT ASSESSMENT
ROLE OF STANDARDIZED TESTS
OTHER EVALUATION INSTRUMENTS & TECHNIQUES
DIAGNOSIS AND PRESCRIPTION
EVALUATION OF OUTCOMES OF AN ESMP

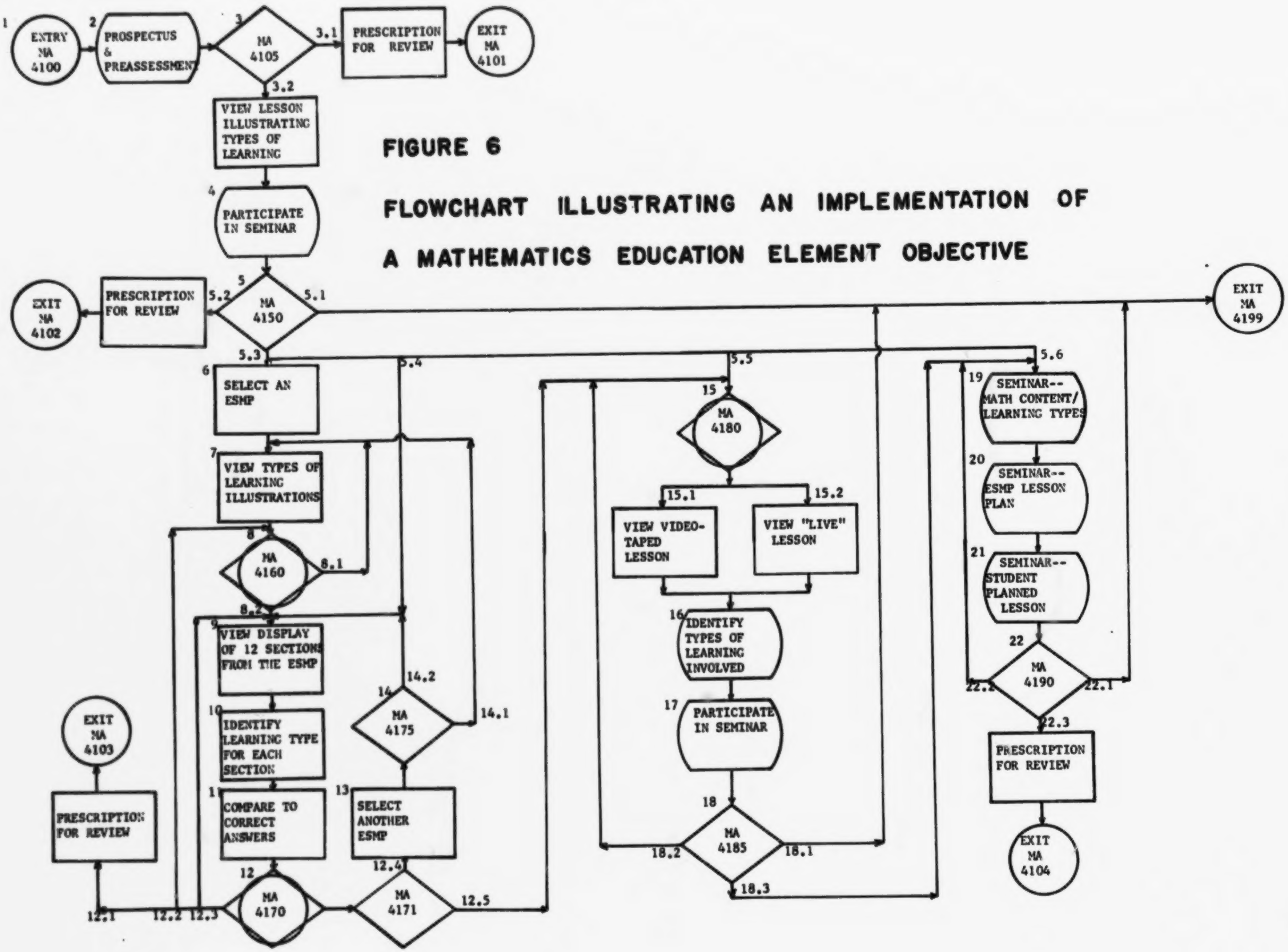
> Can analyze sections of an elementary school mathematics program (ESMP) that illustrate different kinds of mathematical learning.

A second detailed indication of how progress toward the attainment of a particular objective may be implemented is illustrated by Figure 7 and the accompanying guide to Figure 7, using the following specimen objective from the mathematics education element:

> Can use a variety of appropriate instructional materials in the course of teaching a lesson or unit in mathematics.

## FIGURE 6

FLOWCHART ILLUSTRATING AN IMPLEMENTATION OF A MATHEMATICS EDUCATION ELEMENT OBJECTIVE


1
ENTRY MA 4100
2
PROSPECTUS & PREASSESSMENT
3
MA 4105
3.1
PRESCRIPTION FOR REVIEW
EXIT MA 4101
3.2
VIEW LESSON ILLUSTRATING TYPES OF LEARNING
4
PARTICIPATE IN SEMINAR
5
MA 4150
5.1
5.2
PRESCRIPTION FOR REVIEW
EXIT MA 4102
EXIT MA 4199
5.3
5.4
5.5
5.6
6
SELECT AN ESMP
7
VIEW TYPES OF LEARNING ILLUSTRATIONS
8
MA 4160
8.1
8.2
9
VIEW DISPLAY OF 12 SECTIONS FROM THE ESMP
10
IDENTIFY LEARNING TYPE FOR EACH SECTION
11
COMPARE TO CORRECT ANSWERS
12
MA 4170
12.1
12.2
12.3
PRESCRIPTION FOR REVIEW
EXIT MA 4103
12.4
MA 4171
12.5
13
SELECT ANOTHER ESMP
14
MA 4175
14.1
14.2
15
MA 4180
15.1
15.2
VIEW VIDEO-TAPED LESSON
VIEW "LIVE" LESSON
16
IDENTIFY TYPES OF LEARNING INVOLVED
17
PARTICIPATE IN SEMINAR
18
MA 4185
18.1
18.2
18.3
19
SEMINAR-- MATH CONTENT/ LEARNING TYPES
20
SEMINAR-- ESMP LESSON PLAN
21
SEMINAR-- STUDENT PLANNED LESSON
22
MA 4190
22.1
22.2
22.3
PRESCRIPTION FOR REVIEW
EXIT MA 4104

## GUIDE TO FIGURE 6

EDUCATIONAL OBJECTIVE: "CAN ANALYZE SECTIONS OF AN ESMP THAT ILLUSTRATE DIFFERENT KINDS OF MATHEMATICAL LEARNING."

(1) Enter Module. Go to (2)

(2) Comprehensive introduction to module, including:

- (2.1) Preview of nature and objectives (as listed in bold print, below) of module.
- (2.2) Pre-test covering characteristics or features of the eight types of learning identified by Gagne (The Conditions of Learning, 1965). Go to (3).

(3) Decision point:

- (3.1) Exit from module for review work on Gagne's eight types of learning. May re-enter at (2).
- (3.2) Viewing of video-taped or film mathematics lesson in which numerous types of learning are illustrated but not identified. Go to (4).

INSTRUCTIONAL OBJECTIVE 1: THE STUDENT IS ABLE TO IDENTIFY VARIOUS EXEMPLARS OF GAGNE'S LEARNING TYPES IN A SEMINAR DISCUSSION LED BY INSTRUCTOR (FOLLOWING THE VIEWING OF A TAPED OR FILMED MATHEMATICS LESSON).
CRITERION: IN CONFERENCE WITH INSTRUCTOR, FOLLOWING SEMINAR, THEY DECIDE THE STUDENT'S PROFICIENCY IN IDENTIFYING MATH EXEMPLARS OF LEARNING TYPES.

(4) Participate in seminar discussion of (3.2). Go on to (5).

(5) Decision point; in consultation with instructor and based on results of (2.2) and (3):

- (5.1) Exit: essential objective of module for student already achieved.
- (5.2) Exit: remedial prescriptions in educational psychology or mathematics, with later re-entry at (2).
- (5.3) Go to (6).
- (5.4) Go to (9).
- (5.5) Go to (15).
- (5.6) Go to (19).

INSTRUCTIONAL OBJECTIVE 2: THE STUDENT IS ABLE TO IDENTIFY LEARNING TYPES OF GAGNE AS ILLUSTRATED BY "DISPLAYS" USING CONTENT OF A PARTICULAR ESMP. (A DISPLAY MIGHT BE A SET OF PAGES FROM A TEACHER'S EDITION OF A BOOK, TAPED OR WRITTEN CLASSROOM DIALOGUE BETWEEN TEACHER AND PUPILS, ETC.)
CRITERION: STUDENT COMPLETES AN EXAM AND CORRECTLY IDENTIFIES AT LEAST 10 OUT OF 12 LEARNING TYPES.

(6) One of five ESMPs is assigned (selected at random). Go to (7).

(7) Call for display which, for the ESMP designated in (6), shows one illustration of each of Gagne's eight types of learning (to the extent that they are exemplified in the particular ESMP). Go to (8).

(8) Self-decision point:

   (8.1) Call for display of additional illustration(s) of any of the eight types of learning as exemplified in the ESMP assigned (designated) in (6). Then go to (9).

   (8.2) Go to (9).

(9) Call for display of 12 sections from the ESMP designated in (6),--no one of the displays to duplicate any shown earlier in (7). Go to (10).

(10) Identify the learning type(s) associated with each section of (9). Go to (11).

(11) Call for an "answer key" to provide (immediate) reinforcement. Go to (12).

(12) Self-decision point:

   (12.1) Exit from module for remedial suggestions pertaining either to mathematics or to educational psychology; may re-enter later at (6).

   (12.2) Loop back to (8.1) and proceed without duplication of displays.

   (12.3) Loop back to (9) and proceed without duplication of displays.

   (12.4) Go to (13) if not there before.

   (12.5) Go to (15) if already through (13).

(13) Select an ESMP from the four remaining after(6). Go to (14).

(14) Self-decision point:

(14.1) Loop back to (7) and proceed with the ESMP selected in (13).

(14.2) Loop back to (9) and proceed with the ESMP selected in (13).

INSTRUCTIONAL OBJECTIVE 3: THE STUDENT IS ABLE TO INDEPENDENTLY IDENTIFY LEARNING TYPES OF GAGNE VIEWED IN A LIVE OR FILMED MATH LESSON (CONTENT FROM A PARTICULAR ESMP).
CRITERION: THE STUDENT LISTS ALL THE LEARNING TYPES AND THE MATH CONTENT WHICH HE SEES INVOLVED IN EACH EXEMPLAR. THE STUDENT CHECKS HIS LIST IN SEMINAR.

(15) Self-decision point:

(15.1) View a video-taped or filmed lesson. Go to (16).

(15.2) Observe a "live" lesson. Go to (16).

(16) Identify which of the eight types of learning were involved in opted (15). Go to (17).

(17) Participate in seminar to discuss (15) and (16). Go to (18).

(18) Decision point (in consultation with seminar instructor):

(18.1) Exit from module; optional portion accomplished.

(18.2) Loop back to (15) for additional study.

(18.3) Go to (19).

INSTRUCTIONAL OBJECTIVE 4: THE STUDENT IS ABLE TO ANALYZE, IN A GROUP SEMINAR (WITH INSTRUCTOR), THE RELATIONSHIPS OF LEARNING TYPES TO PARTICULAR MATH CONTENT IN AN ESMP.
CRITERION: IN CONFERENCE, FOLLOWING SEMINAR, THE STUDENT DECIDES ABILITY TO IDENTIFY LEARNING TYPES WHICH CAN BE USED WITH PARTICULAR MATH CONTENT IN A PARTICULAR ESMP.

(19) The student participates in a group seminar to analyze and relate math content and learning types. Go to (20).

INSTRUCTIONAL OBJECTIVE 5: THE STUDENT IS ABLE TO PLAN A MATH LESSON TO ILLUSTRATE SPECIFIC TYPES OF LEARNING.
CRITERION: INSTRUCTOR AND STUDENTS, IN SEMINAR, DETERMINE IF THE PLANNED LESSON ACCOMPLISHES THE OBJECTIVE.

(20) The student participates in a seminar to present and discuss a planned math lesson from a particular ESMP which contain exemplars of learning types. Go to (21).

INSTRUCTIONAL OBJECTIVE 6: THE STUDENT IS ABLE TO "IMPLEMENT" A PLANNED MATH LESSON WHICH ILLUSTRATES PARTICULAR TYPES OF LEARNING FOR A SPECIFIED ESMP.
CRITERION: INSTRUCTOR AND STUDENTS, IN SEMINAR, DETERMINE IF THE LESSON, AS TAUGHT, FULFILLS THE OBJECTIVE.

(21) The student participates in a seminar to present and discuss his lesson. Go to (22).

(22) Decision point. The student consults with instructor:

- (22.1) Student exits from module.
- (22.2) Loop back to (19) for further work.
- (22.3) Student exits with advice to retake portions of module at a later time.

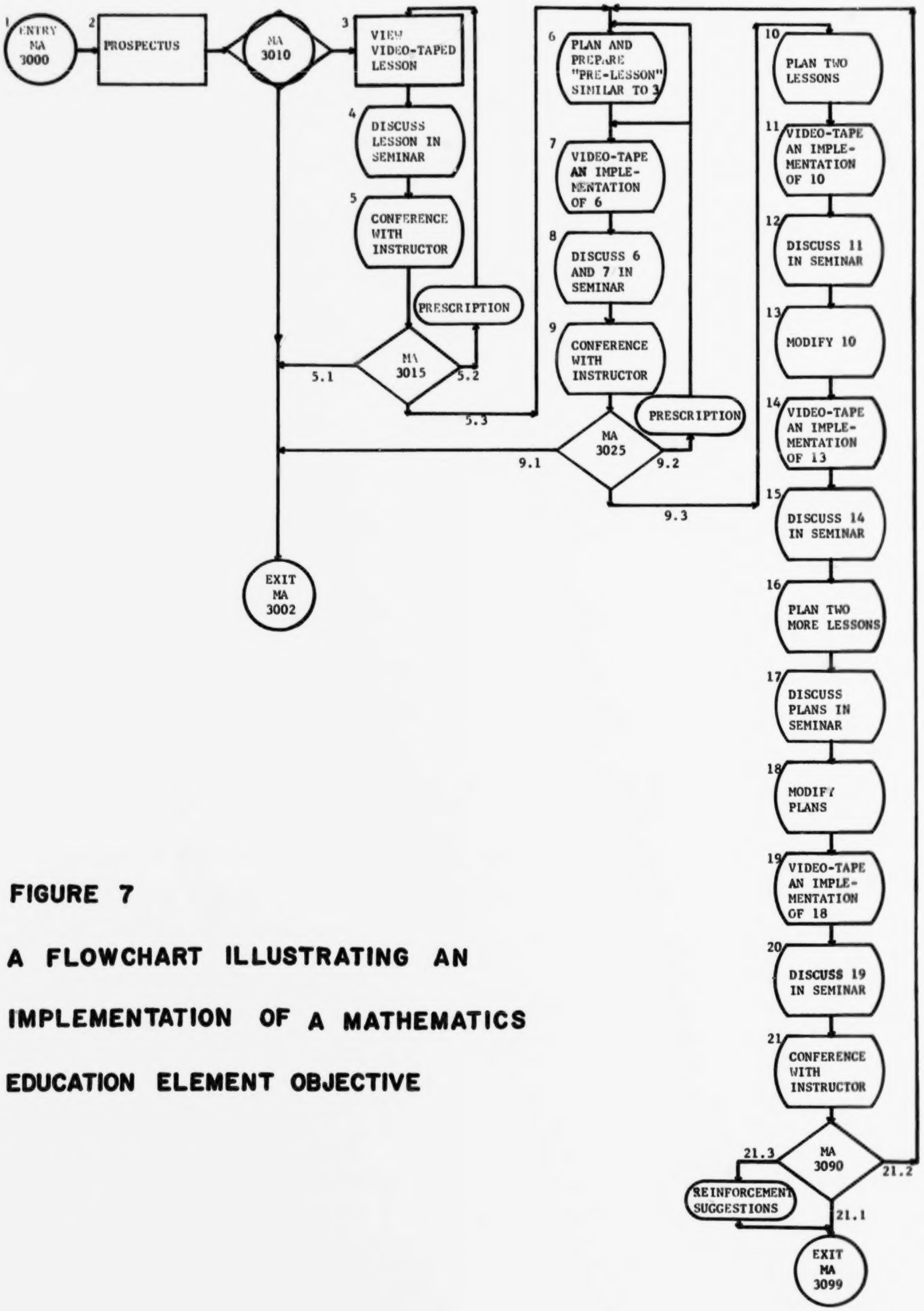

1 ENTRY MA 3000
2 PROSPECTUS
MA 3010
3 VIEW VIDEO-TAPED LESSON
4 DISCUSS LESSON IN SEMINAR
5 CONFERENCE WITH INSTRUCTOR
PRESCRIPTION
MA 3015
5.1
5.2
5.3
6 PLAN AND PREPARE "PRE-LESSON" SIMILAR TO 3
7 VIDEO-TAPE AN IMPLEMENTATION OF 6
8 DISCUSS 6 AND 7 IN SEMINAR
9 CONFERENCE WITH INSTRUCTOR
PRESCRIPTION
MA 3025
9.1
9.2
9.3
EXIT MA 3002
10 PLAN TWO LESSONS
11 VIDEO-TAPE AN IMPLEMENTATION OF 10
12 DISCUSS 11 IN SEMINAR
13 MODIFY 10
14 VIDEO-TAPE AN IMPLEMENTATION OF 13
15 DISCUSS 14 IN SEMINAR
16 PLAN TWO MORE LESSONS
17 DISCUSS PLANS IN SEMINAR
18 MODIFY PLANS
19 VIDEO-TAPE AN IMPLEMENTATION OF 18
20 DISCUSS 19 IN SEMINAR
21 CONFERENCE WITH INSTRUCTOR
MA 3090
21.3
21.2
21.1
REINFORCEMENT SUGGESTIONS
EXIT MA 3099

FIGURE 7

A FLOWCHART ILLUSTRATING AN IMPLEMENTATION OF A MATHEMATICS EDUCATION ELEMENT OBJECTIVE

## GUIDE TO FIGURE 7

This short intra-module instructional unit involves a sequence of four related lessons:

1) showing representations of rectangles that have specified perimeters;
2) showing representations of rectangular regions that have specified areas;
3) studying the perimeters of different rectangles which bound surfaces having a constant area; and
4) studying the areas of different regions which are bounded by rectangles having a constant perimeter.

(1) Enter. (MA 3000)

(2) Preview of the objective(s) and nature of the unit.

Decision point (MA 3010)

Exit (MA 3002), or

Go to (13).

(3) View a video-taped "terminal lesson" in which pupils demonstrate their ability to find (a) perimeters of rectangles and boundaries of rectangular regions, and (b) areas of rectangular regions and surfaces bounded by rectangles, in which a variety of representations are used:

1) geoboards with outlines of rectangles,
2) cross-section paper with outlines of rectangles,
3) sticks or dowel rods for outlines of rectangles,
4) square tiles for outlines of rectangular regions,
5) cardboard or oaktag rectangular regions,
6) drawings of rectangles on plain paper,
etc.

(4) Discuss in a small-group seminar the lesson viewed in (3), from the standpoint of its mathematical content, the materials used, and the appropriateness of particular materials for particular pupils, with implications regarding pupils' levels of ability to find perimeters and areas.

(5) In conference with the instructor involved in (4), decide (MA 3015) to:

(5.1) Exit or

(5.2) Follow suggestions to strengthen one or more aspects of background and then loop back to (3), or

(5.3) Go on to (6).

(6) Plan and prepare materials for a "pre-lesson" similar to (3).

(7) Have video-taped an implementation of (6) with a small group of pupils.

(8) Discuss (6) and (7), and implications, in a small-group seminar.

(9) In conference with the instructor involved in (8), decide (MA 3025) to:

(9.1) Exit, or

(9.2) Follow suggestions for strengthening (6) or (7) and loop back to (6) or (7) with a different small group of pupils, or

(9.3) Go on to (10).

(10) Based on (6) thru (9), plan a sequence of two lessons involving the same pupils used for (7):

(a) a lesson in which pupils use a variety of materials (as in (3)) to show different rectangles (having integral sides) whose perimeters are constant. (Exclude perimeters of 18 and 24 from the examples.)

(b) a lesson in which pupils use a variety of materials (as in (3)) to show different rectangular regions (with integral bounding sides) whose areas are constant. (Exclude areas of 24 and 36 from the examples.)

(11) With the same pupils used for (7), have video-taped an implementation of (a) of (10).

(12) Discuss (11) in a small-group seminar, with particular attention to any modifications that should be made in (b) of (10).

(13) Based on (12), modify (b) of (10).

(14) Have video-taped an implementation of (13), using the same pupils as for (11).

(15) Discuss (14) in a small-group seminar, with particular attention to implications for (16).

(16) Plan a sequence of two more lessons involving the same pupils used for (7), (11) and (14):

(c) a lesson in which pupils use a variety of materials (as in (3)) to determine the areas of all rectangular regions (with integral bounding sides) having constant perimeters of 18 and 24, leading to conclusions about changes in area for specified perimeters, and

(d) a lesson in which pupils use a variety of materials (as in (3)) to determine the perimeters (integral sides) of all rectangles which bound surfaces having constant areas of 24 and 36, leading to conclusions about changes in perimeter for specified areas.

(17) Review plans with small-group seminar and instructor.

(18) Based on (17), modify (16).

(19) Using the same pupils as for (7), (11) and (14), have video-taped and implementation of (18).

(20) Discuss (19) in small-group seminar.

(21) Based on (20) in consultation with instructor, decide (MA 3090) to:

(21.1) Exit: objective attained (MA 3099), or

(21.2) Loop back to (6) and repeat with another small group of pupils, or

(21.3) Exit and reinforce objective by entering a unit which deals with a sequence of lessons on using different materials to develop ideas of decimal base and place value associated with our familiar numeration system.

## In Retrospect and In Prospect

The material presented in this document on the WETEP mathematics education element is intended to be illustrative rather than definitive.

Five subelements have been suggested, and several (2, 3, or 4) modules have been identified within four of the subelements. Illustrative objectives have been formulated in terms in which behavioral connotations are either explicit or implied. Suggested implementation models have been given for the attainment of two intra-module objectives, as instructional units.

The subelements, the modules, and the intra-module instructional units all are intended to reflect characteristics or features such as:

> a brief prospectus concerning the nature of the objectives and instructional activities provided within a particular subdivision of the element;
>
> a pre-assessment to determine the extent to which a student has the necessary prerequisites for a particular subdivision of the element;
>
> one or more subsequent assessments of progress within a particular subdivision of the element;
>
> performance feedback to the student at one or more stages of progress within a particular subdivision of the element;
>
> flexibility for individualization of sequence of student progress among and within various subdivisions of the element;
>
> flexibility for individualization of learning experiences, instructional modes, and media within the subdivisions of the element;
>
> both student- and forced-decision points, leading to options between continuing in or exiting from a particular subdivision of the element;
>
> and flexibility for individualization of a student's level of objective and attainment within subdivisions of the element.

In this present document no attempt has been made to distinguish between several levels of objectives and their attainment, such as:

> those that are essential for all WETEP students;
>
> those that are optional, in the sense of being desirable or of interest for particular students but not essential or necessary for all;

those that are extended, in the sense of contributing to advanced preparation in mathematics education.

The ultimate, more definitive development of the WETEP mathematics education element must give high priority to a delineation of such levels within each of the subelements, modules, and intra-module learning units within the system.

# SCIENCE EDUCATION

Calvin Gale, Chairman

Ronald Anderson

## SCIENCE EDUCATION

Abstract. The Science Education Element of WETEP is designed as a teaching-learning system focused on the individualization of instruction, effected through the application of systems analysis techniques combined with computer management technology. Thus it is designed to offer the student a variety of choices relative to learning environments, the uses of instructional media, and instructional modes.

While it is neither desirable nor possible to model in any specific way the ideal elementary science teacher, certain desirable teacher characteristics may be described, and in this way an operational definition of an effective science teacher can be set down. In WETEP, the effective teacher of elementary science:

- understands the conceptual structure of science, and the mechanisms by which this structure is generated
- understands the role of science in the life of an individual and that of society; he also understands the role of society in the life of science
- has formulated a philosophy of science teaching
- has a favorable attitude toward science and science teaching
- can identify, define, and solve science related problems
- possesses a knowledge of and ability to use a variety of science teaching methods and materials
- recognizes and understands the need for a program of instruction designed to deal with variability among children
- desires to improve the science teaching-learning process.

These desired teacher behaviors comprise the general objectives for the Element and are grouped to form three subelements. The subelements in turn consist of several modules, each of which focuses upon a major program objective. The program provides for great flexibility in student movement through the system. Not only may the student select the order of entry to the modules, but he may also re-enter modules at his option. The system is non-linear; it is highly probable that no two students will trace identical pathways through the system.

Three subelements are named: Philosophy, Process, and Method, followed by statements of objectives, each of which is further detailed in submodular objectives. Within the Process subelement, the Measurement module is examined in depth. This exemplary module is designed to illustrate more specifically the pathways and operations available to the WETEP student as he moves through the Science Education Element system. It details the variety of options available to the student as he interacts with the system in its various instructional forms. Progressing individually through each chosen module, the student will, prior to teacher certification, need to reach the minimal attainment level for all of the specified objectives.

## PROGRAM RATIONALE AND DESCRIPTION

### Individualization of Science Instruction and Learning

Considerable attention has been paid to efforts aimed at individualizing science instruction in the elementary schools but little has been done to provide individualized programs of instruction for the preparation of elementary science teachers. Prospective teachers, like children, exhibit variability along many dimensions among which are knowledge of science concepts and processes, intelligence, creativity, age, sex, social understanding, social conformity, psychomotor abilities and skills, attitudes toward children, attitudes toward science, self-image, curiosity, cognitive skills, attitudes toward learning poise, compassion and knowledge of the science teaching-learning process.

Greater efforts to design and implement programs of individualized instruction for prospective elementary science teachers would seem to be desirable for these reasons:

1. Each prospective teacher should be offered opportunities to develop his teaching capabilities to the limit of his potential.

2. Prospective teachers should become knowledgeable and skilled in the techniques of individualized science instruction. The modes of such instruction should be understood by these prospective teachers so they can apply the techniques in their work with elementary children. It is assumed that such understanding can be achieved most effectively through active participation in a program of individualized instruction.

The application of systems analysis techniques to facilitate educational description, combined with the use of computer management technology, offers interesting possibilities for effecting a high degree of individualization within the teaching-learning processes. Presently the university science education faculty devotes a disproportionate amount of its time and energy to the solution of routine program and instructional problems. The validity of these solutions is often limited by the lack of adequate data and by the lack of specificity of the curriculum. The solution of individual student learning problems, presented in the classroom and in faculty-student conferences, likewise is limited by the available data. Given a situation in which there is sufficient data describing individual students' characteristics and educational progress combined with a curriculum delineated in great detail, there is every reason to believe we can appreciably increase the individualization of instruction and learning. A computer managed instructional system will free the teacher from routine tasks, thus allowing him to spend more time with individuals. Such an instructional system should result in a greater personalization of the teacher-learner relationship.

Focusing on that phase of the elementary teacher education program commonly identified as science teaching methods, we can describe several operant principles essential to an individualized instructional system:

1. There must be precise statements of the behavioral objectives to be attained. These objectives may be formulated for several categories of attainment:

    a. Minimal levels of performance essential to the teaching of science can be described.
    b. Optional levels, beyond the minimal performance levels, can be described.
    c. Extended levels of performance for science program leadership within the school can be described.

2. There must be a highly developed assessment program to provide data during three program phases:

    a. An initial assessment should provide those data necessary to describe an entry attainment profile for each student. This profile would describe the student along those dimensions defined by the behavioral objectives as well as such other dimensions as science concept understanding, motor abilities, creativity and critical thinking skills. These data will be necessary to facilitate the direction of the student to the proper starting points in the teaching-learning system as well as to provide background information for student-faculty conferences.
    b. Continuous assessment while the student is in the teaching-learning system must provide data to:

        (1) Establish when the student has reached the desired attainment level,
        (2) Facilitate the directing of the student as he proceeds through the system,
        (3) Provide feedback data for the improvement of the system and
        (4) Provide feedback to the student to assist him in self-evaluation.

    c. Final assessment must provide those data necessary to describe an exit attainment profile characterizing the student at the time of certification.

3. There should be prescription and self-selection procedures for the direction of each student to appropriate learning activities.

4. Information feedback mechanisms should be an integral part of the system.

5. The objectives of the system as well as the design of the system should be understood by the learner.

## Program Characteristics

The Science Education Element of the Wisconsin Elementary Teacher Education Project has been designed in an effort to provide to elementary teachers of science, a pre-service and in-service individualized instructional program using a variety of instructional techniques and media. Traditional program models and implementation techniques, although functional in many respects, do not offer the flexibility necessary for the desired individualization. Systems models, on the other hand, seem to offer great flexibility to both the student and the program designer. For this reason the science program is modeled in the form of a system. The general characteristics of this system are:

1. Parts of the system may be redesigned without disrupting the entire system.
2. It is designed to provide a continuous assessment of the student.
3. It is designed to be a vehicle for the investigation of the science teaching-learning process, of the various science teaching methodologies and of the characteristics of learners.
4. It provides a variety of science teaching exemplars.
5. It provides for different levels of accomplishment.
6. It provides a variety of optional enrichment activities.
7. Feedback mechanisms are designed to facilitate the evaluation of the system.
8. It provides for the establishment of relationships between science teaching and the foundational areas of educational psychology and educational philosophy.
9. It provides for the systematic orientation of the student to the objectives of the program and to the operation of the program.

It is anticipated that the design of this program will offer flexibility to the student moving through the instructional system, to the faculty as it continuously modifies the system in response to feedback information, and to the researcher who wishes to investigate aspects of the science teaching-learning process.

## Science Teacher Characteristics

While it is neither desirable nor possible to model, in any specific way, the ideal elementary science teacher, we may, with some confidence describe certain desirable characteristics of such teachers and in this manner set down an operational definition of an effective science teacher. An effective elementary science teacher should:

1. Understand the conceptual structure of science, the mechanisms by which this structure is generated and the limitations associated with the science concepts;

2. Understand the role of science in the life of the individual and in the life of the society as well as understand the role of society in the life of science;

3. Have formulated a philosophy of science teaching;

4. Have a favorable attitude toward science and science teaching;

5. Possess the ability to identify, define and solve science related problems;

6. Possess a knowledge of and an ability to use a variety of science teaching methodologies and materials;

7. Recognize and understand the need for instituting a program of instruction designed to cope with the variability among children;

8. Have a desire to improve the science teaching-learning process.

These characteristics, although broadly stated, operationally define the desired product of the WETEP Science Education Element.

## Assumptions and Definitions

Each educational program must have defined system boundaries. We may then look at the operations which occur within the system as well as the input and output characteristics. Additionally one may establish certain lines of communication with other such systems and arrange for exchanges with these systems. The establishment of such systems and system relationships by operational definition and assumption serves to guide the program designer and to give direction for program management.

The development of the Science Education Element of WETEP is based on two sets of assumptions: those related to the university program and those related to the teaching-learning processes.

Program assumptions about the university curriculum and the students who compose the program input:

1. The teaching of science knowledge shall be accomplished in the courses of the several science disciplines.

2. The conceptual structure of science shall be a vehicle for instruction in the Science Education Element but shall not be the learning focus of the element.

3. All students in this instructional system will be competent in some areas of science knowledge but the areas of competency as well as the levels of competency will vary from student to student.

4. Individualization of instruction and learning in science can best be accomplished within the concept of an educational system offering as options to the student, a variety of learning environments, teaching methodologies, and competency level goals at each stage of instruction.

Program assumptions about the science teaching-learning process and the behaviors of elementary science teachers are:

1. No single model may be designed to describe the ideal elementary science teacher in all situations.

2. Each elementary science teacher possesses a unique set of abilities and skills which determines the teaching behaviors most effective for him.

3. Science teacher behaviors exhibited in the classroom affect the learning productivity and efficiency of the pupils.

4. Science teacher behaviors should be related to and influenced by the characteristics of the pupils.

5. Science teacher behaviors should be related to and influenced by the nature of the desired pupil learnings.

6. The science teacher should function so as to maximize the learning opportunities for each pupil.

7. The mode of teaching is determined, to some extent, by the pupil's mode of learning.

8. Teaching and learning proceed most effectively when both the teacher and the pupils have a clear understanding of the objectives of the lesson.

9. Desirable science teacher behaviors can be described, developed into a curriculum, taught, learned, assessed, and put into practice in the classroom.

# INTRODUCTION TO THE PHILOSOPHY SUBELEMENT OBJECTIVES

Science knowledge may be regarded as being composed of observations, (i.e. the "facts" of science) and those concepts devised to classify, correlate, or explain the observations. One view of the relationships between observations and concepts is shown in this model:

Observations ⟶ Concept ⟶ Observations

In a simplified fashion this model represents the formulation of a concept from observations and the subsequent testing of the concept through further observations.

The concept is man-made; it is man's attempt to infer order and reason from the phenomena of nature. No claim legitimately can be made that a given concept represents the "true" picture of a part of nature nor can we claim an infinite lifetime for this concept. A study of the history of science leads to the opposite conclusions. Many examples can be cited to show the intellectual warfare existing when several dissimilar concepts have been generated from essentially similar sets of observations. Likewise the history of science provides ample evidence of accepted concepts being overthrown or superceded by new concepts as new observations have been made or as old observations have been reinterpreted. We must, therefore, regard each existing science concept as a tentative statement, useful to the extent it summarizes or explains observations and/or other concepts, predicts future events, and serves to stimulate hypotheses providing direction for new investigations.

The following statement, dated May 2, 1966, appears as an appendix in the brief submitted in 1967 by the National Education Association and the National Science Teachers Association to the Supreme Court of the United States in the Appeal of Epperson and Blanchard v. State of Arkansas. This statement signed by 179 biologists some of whom are Nobel Laureates, is worthy of study. The second paragraph clearly establishes the probabilistic nature of the science knowledge under discussion. This statement was written in response to the question, "Is biological evolution a principle of nature that has been well established by science?"

"It has for many years been well established scientifically that all known forms of life, including man, have come into being by lengthy process of evolution. It is also known today that very primitive forms of life, ancestors of present-day microbes, arose thousands of millions of years ago. They constituted the trunk of a "tree of life" which in growing branched more and more. That is, some of the later descendants of these earliest living things, passing beyond the level of microbes, became ever more diverse in their kinds, and increasingly different from one another, and some of them came to have a much more complicated organization, that we call more advanced. Man and the other highly organized types of today constitute the present end-twigs of that tree. The human twig and those of the apes sprang from the same ape-like progenitor twig.

"Scientists consider that none of their principles, no matter how firmly established, and no ordinary "facts" of direct observation either, are absolute certainties. Some possibility of human error, even if very slight, always exists. Therefore, instead of there being sharp lines separating "hypothesis," "theory," and "fact," there is a sliding scale of probabilities. Scientists welcome the challenge of further testing of any view whatever. They use such terms as "firmly established" only for conclusions founded on rigorous evidence that have continued to withstand searching criticism. The principle of biological evolution, as above depicted, meets these criteria exceptionally well. It rests on a multitude of discoveries of very different kinds, that concur and complement one another. It is therefore "accepted" into man's general body of knowledge by scientists and by other reasonable persons who have familiarized themselves with the evidence.

"Among the sources of these different kinds of evidence are the following. (1) Fossil records, now abundantly known, of previously existing life. (2) Careful comparisons of the structure of different living things that are visible to one's naked eye by inspection and dissection of them. (3) Careful comparison of their inner workings, that is, their physiology, including their behavior. (4) Comparisons of their development from the earliest embryos to the oldest adult types. (5) Comparisons of their microscopic and ultra-microscopic structures and of the transformations they can be seen to undergo during the course of living. (6) Comparisons of the details of the complicated chemistry of different living things, an extremely deep and intricate subject nowadays. (7) Studies of the pattern of distribution of different kinds of living things on this earth, both at present and in the past. (8) Studies of how plants now cultivated and animals now domesticated have changed as a result of selection practiced on them by man, and the elaborate and far-reaching laboratory and field studies in genetics that show how, in the course of generations, separated populations of living things become different from one another in their inherited constitutions.

"It would be impossible in a few hours to make clear the significance and the weight of this great mass of extraordinary and intricate findings, to persons not already possessed of a considerable biological background. In fact, even they could hardly grasp them in full without long and deep study, preferably extending over years. Moreover, in recent years the evidence in most of the lines mentioned has accumulated much further. This has resulted in the ever firmer establishment and improved understanding of biological evolution, including the further confirmation of the principle of natural selection that Darwin and Wallace more than a century ago showed to be an essential part of the process of biological evolution. There are no hypotheses, alternative to the principle of evolution with its "tree of life," that any competent biologist of today takes seriously. Moreover, the principle is so important for an understanding of the world we live in and of ourselves that the public in general, including students taking biology in high school, should be made aware of it, and of the fact that it is firmly established even as the rotundity of the earth is firmly established."

Each concept has certain implied limitations:

1. The concept is tentative, subject to modification or rejection as new evidence is reported or old evidence is reinterpreted.

2. The concept is restricted in its application by the system within which the observations were made. One may hypothesize the application of the concept to other systems and thereby conduct new investigations.

3. The validity of the concept is contingent or dependent on the validity of the experiment and assumptions as well as on the implied consistency and causality assumptions of the uniformity of nature.

4. Each concept has an associated, often implied, probability statement. Measurements are made within certain limits of error; none can be considered to be exact statements. A concept generated from inexact data has an associated expectation of error. Likewise since we do not describe the entire population of available observations of a set of phenomena we should not expect concepts related to these phenomena to have 100% credibility.

One test of the utility and credibility of a concept relates to the prediction of future events. If we can use the concept to predict specific events in nature we have both increased the credibility of the concept and demonstrated its usefulness. Acceptance of a science concept on the basis of its predictive power is an extremely important idea in the scientific enterprise. Many aesthetically appealing concepts have been rejected because of their lack of predictive power.

The conceptual structure of science is composed of all those ideas generated in the attempt to describe or explain the objects and events of nature. For some purposes it becomes useful to group these ideas as descriptive concepts and theoretical concepts. Descriptive concepts may be separated according to those concepts which are classificatory and those which are correlative. Classificatory concepts are those which establish mutually exclusive groups of objects, phenomena or concepts. Examples of the areas of such concepts are the biological taxonomies, the periodic table groupings and the energy taxonomy. The grouping dimensions on which the classificatory concepts are established range from such immediately perceptible characteristics as heft, color or shape to such theoretical considerations as molecular bond configuration or energy content. The dimension serving as the basis for a classificatory concept is arbitrarily determined as useful; hence the classificatory concepts and taxonomies must be regarded as man-made and not inherent in nature.

Correlative concepts result from our attempts to establish functional dependence among object characteristics, events or other concepts. Each correlative concept describes a relationship among several variables. The relationships may be established by man's perception of simultaneous or ordered events, man's perception of the event and the characteristics of the objects involved in the event or man's perception of the characteristics of objects within a system. Examples of correlative concepts are: offspring tend to resemble their parents; a force applied to a body tends to accelerate the body; and most plants need sunlight for growth.

Theoretical concepts are those which are designed in an attempt to explain phenomena and concepts inferred from observations of phenomena. Often the theoretical concept is expressed in model form as is the case with various atomic and molecular theories. Whereas classificatory and correlative concepts can be inferred directly from observations of nature, theoretical concepts are created to explain and give structure to descriptive concepts. Theoretical concepts are the products of very creative individuals often regarded as the giants of science.

If one is to teach science concepts he must understand the structure of science knowledge, the processes through which this knowledge is generated and the limitation associated with this knowledge. He must recognize and understand that science knowledge is the product of man and is not inherent in the natural phenomena being described or explained. He must recognize this knowledge as a dynamic structure, ever changing in response to new investigations.

*Objective One*: *Given this model of the relationships between observations and science concepts*:

OBSERVATIONS → CONCEPTS → OBSERVATIONS

*formulates statements describing the structure of science knowledge and the relationships between science knowledge and the processes used to derive this knowledge*.

1a. Given a set of observations and concepts, identifies each member of the set as either an observation or a concept.

1b. States four limitations associated with all science concepts.

1c. Distinguishes between inferences based on observations and predictions based on concepts.

1d. Cites examples to illustrate that several inferences can be made from a given set of data.

1e. Cites examples to illustrate that the knowledge structure of science is ever changing.

1f. Cites examples to illustrate that a given science concept is subject to modification or refutation as new observations are reported or old observations are reinterpreted.

1g. Differentiates between classificatory concepts, correlative concepts, and theoretical concepts.

1h. States that science concepts are the products of man and are not inherent in the natural phenomena being described or explained.

1i. Shows a knowledge and an understanding of science conceptual schemes.

1j. Given a set of concept statements, identifies each statement as either a classificatory concept, a correlative concept or a theoretical concept.

1k. Identifies within the model, the processes of making inferences and making predictions.

Objective Two: Formulates statements evidencing knowledge and understanding of the relationships of science to the rest of society.

2a. Lists four areas of the relationship of science and society.

2b. Lists three examples of societal sociological influences on society.

2c. Lists three examples of science sociological influences on society.

2d. Lists three examples of societal economic influences on science.

2e. Lists three examples of science economic influences on society.

2f. Lists three examples of societal political influences on science.

2g. Lists three examples of science political influences on society.

2h. Lists three examples of how science influences the aesthetic values of society.

2i. Lists three examples of how science has influenced the ethical structure of society.

2j. Lists three examples of how society influences the direction of scientific research.

2k. Describes how the ethical structure of science is influenced by society.

2l. Formulates statements relating similarities and differences of scientific investigation and investigation in other academic fields.

Objective Three: Describes the assumptions and ethical rules of the scientific enterprise.

3a. Lists three assumptions about nature implied in the operation of the scientific enterprise.

3b. Lists four ethical rules of the scientific community.

3c. Describes the importance of ethical rules in the scientific community.

3d. Distinguishes between the aims of pure science and the aims of applied science.

Objective Four: Formulates statements describing the purposes and objectives of science education in the elementary school and relates these statements to a philosophy of science and a philosophy of education.

4a. Formulates a statement describing the purposes of science education in the elementary school.

4b. Formulates a set of statements describing the general goals of the science program in the elementary school and its relation to the K-12 science curriculum.

4c. Given a set of goals for the science program in the elementary school, he evaluates the goals, describing the criteria used in the evaluation.

4d. Shows how the objectives of science education are related to a philosophy of science and a philosophy of education.

Objective Five: Makes observations using direct and indirect means and assesses the order of precision of each observation.

5a. Distinguishes differences in physical properties of objects by direct observation.

5b. Manipulates or changes an object in order to expose its properties for observation.

5c. Uses various instruments to aid the senses in making observations.

5d. Makes observations without inference.

5e. Repeats observations as a means of improving reliability.

5f. Orders events chronologically.

5g. Identifies change in properties and measures rates of change.

5h. Differentiates constants from variables.

5i. Identifies correlational changes in variables.

Objective Six: Classifies objects or events using a scheme based on arbitrarily selected properties and groups these phenomena into mutually exclusive categories.

6a. Perceives similarities and differences in a set of objects.

6b. Separates a set of objects into two groups according to those that have or do not have a single characteristic.

6c. Groups a set of objects on the basis of a gross characteristic such as color or shape where many identifiable variations are possible.

6d. Develops arbitrary one-stage classificational schemes where all included objects of phenomena may be put into mutually exclusive categories.

6e. Uses quantitative measurements as criteria for grouping.

6f. Sets limits as a means of grouping on the basis of a continuous variable.

6g. Develops classificational schemes of two or more stages of subsets having mutually exclusive categories.

6h. Uses an accepted classification system or key to identify objects or phenomena.

6i. Uses characteristics observed under imposed conditions as a basis for grouping.

Objective Seven: Makes inferences based on observation of phenomena, assesses the validity of the inferences and makes certain predictions about the nature of the phenomena.

7a. Demonstrates that inference is based on observation.

7b. Separates pertinent observations upon which given inferences are based from those which are extraneous.

7c. Develops an inference from a set of related observations.

7d. Develops a series of inferences from a set of related observations.

7e. States cause and effect relationships from observations of related events.

7f. Identifies limitations of inferences.

7g. Modifies and extends inferences to include discrepant events.

7h. Develops plans to test the validity of inferences.

7i. Uses inferences to suggest further observation.

7j. Extends inferences to formulate models.

Objective Eight: Makes predictions, based on inferences formed from observations, concerning the expected nature of given phenomena and uses experimentation to determine the accuracy of the prediction and the validity of earlier inferences.

8a. Distinguishes between guessing and prediction.

8b. Uses repeated observations of an event to predict the next occurrence of that event.

8c. Uses a series of related observations to predict an unobserved event.

8d. Uses quantitative measurement as a means of improving the accuracy of prediction.

8e. Limits variation in conditions affecting prior observations in order to improve the accuracy of prediction.

8f. Demonstrates the accuracy of prediction in order to establish the validity of previously held concepts upon which the predictions are based.

8g. Uses interpolation and extrapolation as means for making predictions.

8h. Establishes criteria for stating confidence in prediction.

Objective Nine: Measures properties of objects or events using direct or indirect comparison and identifies measurable characteristics which may be interrelated to provide other quantitative descriptions of physical phenomena.

9a. Orders objects by inspection in terms of magnitude of selected common properties such as linear dimensions, area, volume, or weight.

9b. Orders objects in terms of magnitude of properties by using measuring devises without regard for quantitative units.

9c. Compares quantities such as length, area, volume, and weight to arbitrary units. Compares time to units developed from periodic motions.

9d. Uses standard units for measure.

9e. Selects one system of units for all related measurements.

9f. Identifies measurable physical quantities which can be used in precise description of phenomena.

9g. Measures quantities which depend upon more than one variable.

9h. Converts from one system of units to another.

9i. Devises and uses indirect means to measure quantities.

9j. Uses methods of estimation to measure quantities.

Objective Ten: Communicates observations and ideas by clear, concise and meaningful statements either verbally or written as accurate records or graphical representations.

10a. Describes observations verbally.

10b. Describes conditions under which observations were made.

10c. Records observations in a systematic way.

10d. States questions and hypotheses concisely without ambiquity.

10e. Constructs tables and graphs to communicate data.

10f. Plans for communication of procedures and results as an essential part of an experiment.

10g. Reports experimental procedures in a form such that other persons can replicate the experiment.

10h. Uses mathematical analysis to describe interpretations of data to others.

10i. Uses tables and graphs to convey possible interpretations of data.

Objective Eleven: Interprets data by inferring, predicting, classifying, and communicating certain things about observations and revises the interpretation in light of any new or more refined data.

11a. Selects data pertinent to the question asked.

11b. Processes raw data to expose trends or relationships.

11c. Describes information as it is displayed on tables or graphs.

11d. Sets criteria for assessing the validity, precision and usefulness of data.

11e. Compares sets of related data to test the credibility of inferences and generalizations.

11f. Selects the most acceptable among multiple interpretations of the same set of data.

11g. Determines estimated values of statistics from sample data and evaluating possible errors.

11h. States criteria for restricting inferences and generalizations to those supported by the data.

Objective Twelve: States precise operational definitions of phenomena based on its observable characteristics and gives the minimum information needed to differentiate what is defined from related phenomena.

12a. Distinguishes between operational definition and general description.

12b. Selects characteristics of phenomena suited to use in operational definition.

12c. States minimal observable characteristics required for an operational definition.

12d. Establishes the criteria for operational definitions according to their intended use.

12e. Establishes the criteria for operational definitions.

12f. Describes the limitations of operational definitions.

12g. Uses mathematical relationships in making operational definitions.

12h. Formulates operational definitions of experimental parameters such as system boundaries, data gathering procedures and interactions of variables.

Objective Thirteen: Formulates precise questions in an attempt to evaluate observation, and states the question in the form of a workable hypothesis which can be tested to establish its credibility.

13a. Separates questions which can only be answered philosophically from those which can be answered from experience.

13b. Asks questions confined to the observations which can be made.

13c. Separates broad questions into parts which when answered will contribute to a comprehensive explanation.

13d. Restricts questions to those that demand only a positive or negative response.

13e. Asks questions or states simple hypotheses which can be tested.

13f. States hypotheses in forms which suggest the variable to be manipulated.

13g. Differentiates between hypotheses which must be tested qualitatively and those which can be tested quantitatively.

13h. States negative hypotheses in an attempt to eliminate variables.

Objective Fourteen: Designs experiments with well controlled variables and appropriate apparatus which are able to indicate within certain limitations whether the hypothesis should be accepted, modified or rejected on the basis of data obtained.

14a. Manipulates apparatus to make pertinent observations.

14b. Identifies observations which are relevant to an experiment.

14c. Distinguishes useful from extraneous data.

14d. Describes the problems involved in making desired observations.

14e. Identifies relevant variables in an experimental situation.

14f. Maintains an accurate record of experimental procedures and results.

14g. Controls those variables not a part of the hypothesis being tested.

14h. Identifies sources of experimental error.

14i. Describes the limitations of experimental apparatus.

14j. Describes the limitations of the experimental design.

Objective Fifteen: Devises models, both physical and mental, to describe or explain the interrelationship of objects and/or events of given hypotheses.

15a. Distinguishes between models and reality.

15b. Explains observed phenomena by using models devised by others.

15c. Constructs a physical representation, a drawing, or a mental image to explain observed phenomena.

15d. Extends physical or mental models to include related phenomena.

15e. Modifies existing models to include new observation.

15f. Formulates physical or mental models idealizing observed conditions in order to minimize variations.

15g. Devises tests for the credibility of an existing model.

15h. States limitations for models.

## METHODS SUBELEMENT OBJECTIVES

Objective Sixteen: Given a lesson to design, formulates objectives in behavioral terms, describes the desired behaviors of the teacher, describes the assessment techniques to be used and indicates the science materials, and media to be used by the teacher and the students.

16a. Given an objective stated in generalized terms, such as: Understands the differences between series and parallel circuits, formulates a set of behavioral objectives exemplified by these statements:

(1) Identifies those circuits with parallel connections when presented with several circuits.

(2) States that lamps connected in series become dimmer when more lamps are placed in the circuit while lamp brightness in a parallel circuit is unaffected by the addition of more lamps.

(3) Given the circuit components, can construct a circuit with lamps in parallel and a circuit with lamps in series.

16b. Given a set of behavioral objectives, designs a set of learning activities accompanied by a statement relating how the activities will be varied according to the characteristics of the individual students.

16c. Given a set of behavioral objectives, designs an assessment procedure to determine each student's status at the beginning of the lesson.

16d. Given a set of behavioral objectives, designs an assessment procedure to determine each student's rate of progress toward the attainment of the desired behaviors.

16e. Given a set of behavioral objectives, formulates statements indicating the minimal acceptable level of performance for each objective.

16f. Given a fully designed lesson, formulates a statement indicating how the lesson objectives will be described for the students prior to the commencement of the lesson.

16g. Designs a lesson which frees the student from traditional learning restraints such as dependence on a textbook.

Objective Seventeen: With each new set of desired learnings the teacher assesses the students initial possession of the desired behavioral objectives, periodically evaluates the student's progress and prescribes appropriate learning activities, and upon completion makes final assessment of the student's achievement of the desired objectives and in turn evaluates his own teaching effectiveness.

17a. Prescribes learning activities in relation to students' abilities and experience.

17b. Interprets evaluation results to prescribe additional learning activities.

17c. Provides activities by which the students can evaluate their own progress.

17d. Uses a variety of evaluative techniques to assess all aspects of a student's learning.

17e. Determines the validity of his paper and pencil tests.

17f. Differentiates between scholastic achievement and classroom behavior.

17g. Describes to his students the methods of test scoring prior to the testing period.

17h. Interprets the test scores to his students.

17i. Evaluates his own teaching effectiveness on the basis of student achievement of desired behaviors.

17j. States to his students the goals to be evaluated and the instrument to be used.

17k. States the purpose for each stage of evaluation.

17l. Assesses student behaviors prior to the start of each new lesson.

17m. Encourages self-evaluation by his students.

Objective Eighteen: Uses science demonstrations and laboratory activities as the primary sources of data for the students.

18a. Identifies five sources of ideas for classroom demonstrations and experiments.

18b. States five purposes for presenting a science demonstration.

18c. Distinguishes between an experiment and a laboratory exercise.

18d. Encourages students to make hypothesis which can be tested with the help of laboratory-gathered data.

18e. Uses demonstrations to motivate students.

18f. Given a description of a simple experiment, identifies the variable and the controls.

18g. Improvises with "home made" apparatus when commercial equipment is not available.

18h. Makes provisions for student data gathering activities in each lesson plan.

18i. Practices each demonstration or laboratory activity prior to carrying on the activity in class.

18j. Describes safety procedures to be followed by the students.

18k. Uses demonstration apparatus large enough to be seen by all students.

18l. Uses demonstrations to illustrate the various laboratory techniques.

18m. Prepares alternative procedures in the event of a demonstration failure.

Objective Nineteen: Selects, prepares and uses various types of media such as printed materials, projection and recording equipment, bulletin boards and models as aids to achieving the desired behaviors in students.

19a. Can identify the uses and limitations of the various media available in the classroom.

19b. Plans for the appropriate use of media in the daily lesson.

19c. Makes certain the students are aware of the relevance of the particular media in the daily lesson.

19d. Plans for the availability of special media on certain days.

19e. Uses a variety of media in the course of teaching a lesson or unit.

19f. Operates effectively, the various mechanical media.

Objective Twenty: Presents the daily lesson material through a well combined use of questioning and class discussion of such things as pre-lab introduction and post-lab conclusions which stimulate thoughtful student response in accord with the desired behavioral outcomes.

20a. States the specific objective for which he is asking a given question.

20b. Asks questions which are fitted to the knowledge and understanding of the pupils.

20c. Asks questions which stimulate students to formulate hypotheses.

20d. Uses a series of questions to lead students in arriving at certain conclusions.

20e. Uses questions to stimulate student enthusiasm and participation.

20f. Directs questions to class as a whole.

20g. Encourages students to ask questions of one another.

20h. Uses a variety of questions in the process of a class discussion.

20i. Periodically asks questions which are to assess student understanding of material.

20j. Uses discussion to explore implication of desired learning.

20k. Asks questions which provoke thought and are not merely testing memory.

20l. Uses appropriate statements or questions as transitions from one topic to another.

Objective Twenty-One: In a given learning situation the teacher interacts with the students in such a way as to make the students aware of their individual capabilities and objectives and to insure a high probability that the students will acquire the desired behaviors and be able to use them effectively at a later time.

21a. Makes certain that the student has the prerequisite behaviors for the desired learnings.

21b. Provides a situation where the student will attend to the achievement of a given behavior.

21c. Makes certain the student has and uses the procedure and materials needed to achieve the given behavior.

21d. Identifies and anticipates areas of individual difficulties.

21e. Periodically assesses the student's progress toward achievement of the objective and identifies with the student any areas of needed improvement.

21f. Commends student effort and gives praise for work well done.

21g. Upon the student's achievement of the desired behavior the teacher evaluates his ability to apply the behavior in a variety of different instances.

21h. Guides the student in realizing and organizing his own use of the behavior.

21i. Guides the student in becoming aware of ways in which certain behaviors can maximize his own personal satisfaction and social worth.

Objective Twenty-Two: Evidences a favorable attitude toward science and science teaching.

22a. Seeks help in the design of science lessons.

22b. Plans for a structured science program continuing through the entire year.

22c. Provides for a variety of activities during a science lesson.

22d. Identifies current issues in the field of elementary school science.

22e. Identifies several recent curricular developments in elementary science and evaluates these developments within a stated philosophical framework.

22f. Accepts critical appraisal of his teaching techniques and responds with evaluative comments.

22g. Is acquainted with at least one journal devoted to the teaching of science.

22h. Retains membership in at least one society concerned with the teaching of science.

22i. Reads, regularly, at least one journal devoted to the teaching of science.

22j. Attends, periodically, professional meetings devoted to the teaching of science.

22k. Relates science learnings to the experiences of the students.

22l. Provides a variety of science resources within the classroom.

22m. Requests that the librarian order science references for the library.

22n. Participates in science curriculum revision projects.

22o. Expresses satisfaction in working with children in a science program.

22p. Expresses an awareness of and appreciation of the importance of science in our society.

22q. Allows students to express interpretations, opinions or inferences differing from those of the teacher.

22r. Has a science related hobby.

22s. Performs simple science experiments to satisfy his curiosity.

22t. Seeks to devise innovative procedures for teaching science.

22u. Encourages students to pursue, independently, the answers to questions raised during the science lesson.

22v. Provides for field trips to science laboratories, school forests, etc.

22w. Shows awareness of new scientific developments.

22x. Appears enthusiastic when teaching science.

22y. Describes a "model" science teacher and works toward the achievement of this model.

22z. Uses new and different materials occasionally in the teaching of science.

22aa. Uses student achievement results and student interest as feedback data to improve his teaching techniques.

## THE SCIENCE EDUCATION INSTRUCTIONAL SYSTEM

The design of the Science Education Element of the Wisconsin Elementary Teacher Education Program is based on the assumptions described in the first section of this paper. This element is designed to be a teaching-learning system for the area commonly known as elementary science methods. All students entering this element will have had previous instruction in the various science disciplines where instruction will have focus primarily on the conceptual structure of science. The role of the Science Education Element will be to relate this conceptual knowledge to the curriculum and the teaching-learning climate of the elementary school as well as to the philosophical foundations of science and science education.

The design of the instructional system for this element has proceeded in several steps. A program model was formulated to provide overall direction for the design of systems, then a set of behavioral objectives was developed for this element. These objectives were then grouped into three areas of philosophy, processes and teaching methods. Finally, the teaching-learning system was designed.

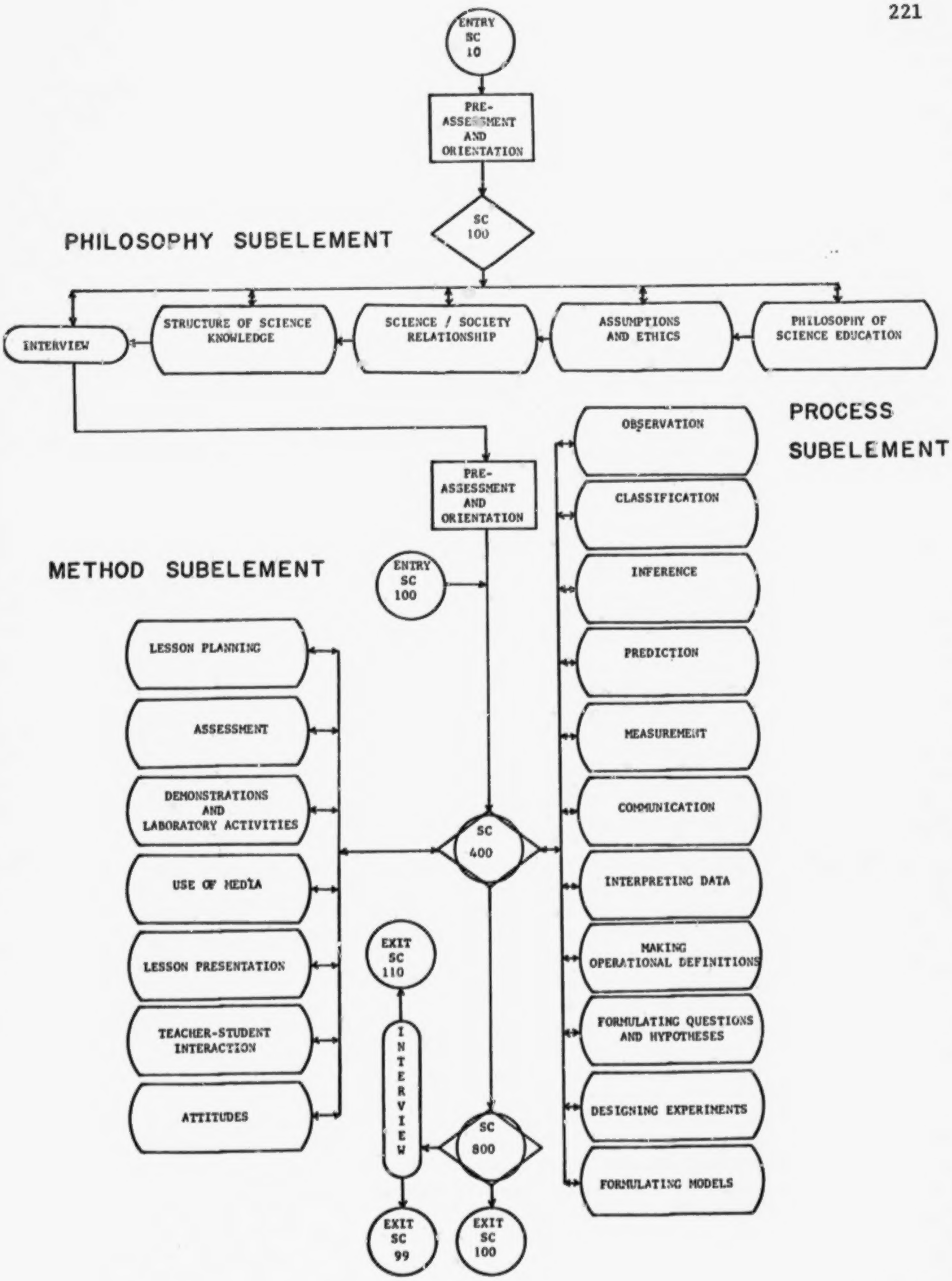
### Science Education Element System

The model of the WETEP science instructional system is shown in Figure 1. The Science Education Element consists of the three subelements: Philosophy, Process, and Method. Each subelement, in turn, consists of several modules, each of which is a complex instructional unit focusing on a major behavioral objective. One such module is shown in detail in Figure 2 and will be discussed in a later section. The behavioral objectives described earlier are organized in the same framework as the modules of Figure 1 and thus may be related directly to the system model. The symbols used on this flowchart as well as on Figure 2 are described on p. 3.

Certain characteristics of this system are evident from a study of Figure 1. The model provides for great flexibility in student movement through the system. This is particularly true for the method and process subelements. Not only may the student select the order of entry to the modules, but he may also re-enter modules at his option. The system is non-linear; it is highly probable that no two students will trace identical pathways through the system.

The operation of the system may be described most effectively by identifying the major decision points and operations encountered by a student as he progresses through the system:

SC 10. This is the system's entry point for all students. The first operation encountered by the student is that of pre-assessment and orientation. The assessment operations are focused on two areas, the establishment of a broadly defined science attainment profile for each


ENTRY SC 10
PRE-ASSESSMENT AND ORIENTATION
SC 100
PHILOSOPHY SUBELEMENT
INTERVIEW
STRUCTURE OF SCIENCE KNOWLEDGE
SCIENCE / SOCIETY RELATIONSHIP
ASSUMPTIONS AND ETHICS
PHILOSOPHY OF SCIENCE EDUCATION
PROCESS SUBELEMENT
PRE-ASSESSMENT AND ORIENTATION
METHOD SUBELEMENT
ENTRY SC 100
OBSERVATION
CLASSIFICATION
INFERENCE
PREDICTION
MEASUREMENT
COMMUNICATION
INTERPRETING DATA
MAKING OPERATIONAL DEFINITIONS
FORMULATING QUESTIONS AND HYPOTHESES
DESIGNING EXPERIMENTS
FORMULATING MODELS
LESSON PLANNING
ASSESSMENT
DEMONSTRATIONS AND LABORATORY ACTIVITIES
USE OF MEDIA
LESSON PRESENTATION
TEACHER-STUDENT INTERACTION
ATTITUDES
SC 400
EXIT SC 110
INTERVIEW
SC 800
EXIT SC 99
EXIT SC 100

Model of Science Education Element

FIGURE 1

student and the careful measurement of the achievement of the behavioral objectives of the philosophy subelement. The orientation operation will broadly describe the science system, the learning goals, the system operations, the spectrum of options available to the student and the relationships of the Science Education Element to the other elements of WETEP.

SC 100. This is a forced decision point, that is to say it is primarily a program decision point. This decision determines the levels at which the student will begin his instruction in the four philosophy modules. It will be made on the results of the pre-assessment operation and on the other student data available within WETEP. If the pre-assessment data so suggests, the student will be given the opportunity to by-pass the subelement and move directly, following the interview operation, to the next subelements. However, except in the presumed-to-be-rare by-pass cases, the student will proceed through a program of instruction in the four philosophy modules. The order of instruction among and within modules, the modes of instruction and the levels of attainment will be selected, to a very large degree, by the student. The more specific nature of the choices to be made by the student will be discussed in the section in which the measurement module is described.

Upon apparent successful completion of the philosophy subelement, the student will be directed to the interview. This is viewed as having both counseling and assessment function. The interview will result in the student's being directed either back to the philosophy subelement or to the pre-assessment and orientation operation preceeding entry to the next subelement.

SC 400. This is a major free decision point through which the student will pass many times prior to the completion of the pre-certification science program. This decision point allows free passage between the process and method subelements. Assume that the student elects to enter one of the process modules for instruction. Upon completion of all or part of that modular instructional program, he may leave the module and enter another process module for a period of instruction or he may leave the process subelement through SC 400 and enter one of the method subelement modules. A third option, that of leaving the Science Education Element system for a period of time, is also available. The pathway for this option is through SC 400 to SC 800 and then exiting by SC 100. Reentry to the element is through SC 100 or to SC 400 and thence to one of the modules.

This flexibility of pathway choice is both necessary and desirable. We have, at the present time, insufficient knowledge in the areas of instruction and learning to adequately prescribe the system pathways for any student. It appears unlikely that we would ever wish to add this constraint to a system which stresses individualization of instruction and learning.

When the student has satisfied the minimum criterion measures for teacher certification in both subelements, he may exit the system through the final interview operation and exit SC 99. This exit is viewed as only temporary in nature, however, since extended study within the element will be available to those students whose specialization is science and to those who, as classroom teachers, return to the element for continuing in-service education.

This overview of the generalized operation of the Science Education Element's system presents a picture of the types of decisions to be made within the system. It also illustrates the variety of pathway choices available to the student. The overview does not attempt to describe the students' more intimate relationship to the system as he proceeds along the pathways within a module and interacts with the system in the various instructional forms. This more detailed description is the subject of the next section.

## Measurement Module Model

The measurement module model shown in Figure 2 is designed to illustrate more specifically the pathways and operations available to the student as he moves through the Science Education Element system. At this level of specificity, it is shown that there are a variety of options available to the student in the areas of level of attainment of the system objectives, instructional modes, replication of instruction, areas of science serving as the vehicle of instruction, instructional media and time devoted to the attainment of learning objectives.

Before describing the options available to the student as he proceeds through this module, the objectives of the measurement module should be described in some detail. Although they have been listed earlier, they are detailed here for the reader's convenience:

Objective Nine: Measures properties of objects or events using direct or indirect comparison and identifies measurable characteristics which may be interrelated to provide other quantitative descriptions of physical phenomena.

9a. Orders objects by inspection in terms of magnitude of selected common properties such as linear dimensions, area, volume, or weight.
9b. Orders objects in terms of magnitude of properties by using measuring devices without regard for quantitative units.

9c. Compares quantities such as length, area, volume, and weight to arbitrary units. Compares time to units developed from periodic motions.
9d. Uses standard units for measure.
9e. Selects one system of units for all related measurements.
9f. Identifies measurable physical quantities which can be used in precise description of phenomena.
9g. Measure quantities which depend upon more than one variable.
9h. Converts from one system of units to another.
9i. Devises and uses indirect means to measure quantities.
9j. Uses methods of estimation to measure quantities.

These measurement objectives are ordered from simple to complex. Arrangement of objects according to same size dimension is a less complex operation than the measurement of such a quantity as density whose value depends on several measurement parameters. It seems reasonable, therefore, to direct the students through this module in linear fashion, requiring the successful attainment of the measurement objectives in order from 9a to 9j. Although the ordering seems to be logically sound, it may not be as sound psychologically. Data accumulated as students progress through this module will tend to either support or refute this ordering. A structured system such as this should prove to be a powerful research tool to aid in answering such questions in many areas of instruction and learning.

Certain terms appearing in Figure 2 must be defined prior to a description of the model:

| | |
|---|---|
| Introductory Level - | a level of instruction designed to help the student gain basic learnings related to a specific behavioral objective. An instructional sequence at this level is provided to those students who apparently have had little or no background in the area under study. Instruction at this level might also be termed remedial instruction. |
| Minimal Level - | this level of instruction and learning represents that level of attainment of the behavioral objective judged necessary for adequate functioning as an elementary science teacher. All WETEP students must achieve minimal level competence. |
| Optional Level - | This represents a level of instruction and learning beyond the minimum requirements and available to a student at his choice. This level of attainment is required of those students whose specialization is science or who study at this level at the time of in-service education. |

Extended Level - attainment at this level would represent superior knowledge and skill in the area of a given objective. Possibly most instruction at this level would be in-service in nature.

Biological Science Physical Science and Earth Science operations - All instruction in the Science Education Element system will be within a science context. In the case of the measurement module all measurement concepts and skills will be related to science objects and phenomena. The student will be able to choose from among the three major science areas the one in which he wishes to study the particular topic each time he enters an instructional form.

Form - This is a complex operation representing student interaction with instructional and assessment materials. Each form includes several modes of instruction from which the student may select. Such instructional modes available might make it possible for the student to indicate his preference for study through printed materials, films, computer-assisted instruction, tutoring, seminar meetings, or a variety of other instructional techniques and materials. In any instructional mode, an instructor will always be available to the students for assistance or personal interaction as he progresses through the instructional program.

Switch - This represents a subroutine through which the student will be directed for further instruction if he does not reach the desired attainment level during the first instructional sequence. Should a student begin cycling through this operation, he will be given special assistance.

The submodules (i.e., the pathways operations and decision points associated with a given behavioral objective instructional program) are shown in the figure at various levels of complexity.[1/] It is highly probable that all or most of the students entering this module already will have attained the behaviors associated with such objectives as 9a and 9b. It is, therefore, anticipated that relatively simple submodules will be developed for these objectives. On the other hand, high order measurement behavioral objectives will probably require the development of relatively complex instructional submodules with a wide variety of instructional choices for students. The submodules of Figure 2 are shown for illustrative purposes at this time.

Entry to the measurement module will be through SC 9000. The first operation encountered by the student will be the module pre-assessment and orientation. This operation will produce a general measurement attainment profile for the student and will orient the student to the module

1/ See figure 9, page 75, of volume 1.

including a detailing of the module objectives. Following this operation the student will reach SC 9020, a program decision point, at which time he will be directed to the starting point (i.e., 9a, 9b, 9c, etc.) in the module appropriate to his present level of competence and understanding.

For purposes of illustration and discussion, let us follow the pathway of a student who has been directed to 9f in this module. Entering 9f he is given a short orientation to the submodule. During this orientation, the modular structure is described, the nature of the various student choices is detailed and the behaviors to be attained are outlined. The student is presented with data showing his present level of attainment and is told how the learning system may be of assistance in reaching the desired performance level. The first decision point reached is SC 9070. At this point, he is directed to either the introductory level or minimal level instructional program. This decision is based on the pre-assessment data.

Assuming he is directed to the minimal level program he reaches decision point SC 9074, a free decision point. He may select instruction in any of the three science contexts. If his strength in science lies in the biological area, he will likely select that pathway. The learning activities of that form will all utilize biological concepts, materials and phenomena as illustrative devices for meeting the objectives of the level. Any laboratory activities will be carried on in a biological context. Science examples will be drawn from biology and assessment will be carried on in a biological framework.

Having selected biological science as the vehicle of instruction, the student will then select one of several instructional forms. The forms available will depend upon the nature of the behavior to be attained and the success experience of the system with the various forms in relation to students with particular characteristics. Upon completing the instructional form the student reaches SC 9077, a program decision point. The student who has not reached the minimal attainment level will be directed through the switch subroutine to SC 9074 where again he will select a pathway through the submodule.

The successful student is directed at SC 9077 to SC 9079, a free decision point. Several options are available to him at this point:

1. He may leave the 9f submodule and proceed to 9g or to SC 9327 and then exit the module through SC 9001. Should he exit the module, he could re-enter through SC 9000, by-passing the assessment operation at SC 9020 at which point he would be directed to the 9g submodule.

2. He may elect another instructional program at the minimal level. Having selected the biological science pathway the first time, he might select the physical science pathway the second time wanting to make application in some physical

science area. In this way the system contributes to the attainment of science educational objectives and incidentally enhances the student's science knowledge, even though the element is not focused on that goal. The pathway for this choice is from SC 9079 to SC 9070 to SC 9071 to the minimal level instruction program.

3. He may elect to develop the submodule behavior to greater degree. This possibility is available in the optional level instructional program. Having decided to follow this pathway, he is offered the same types of choices at SC 9075 as were available at SC 9074. Should he wish, he may cycle through the optional level instructional program.

Prior to certification the student will need to reach the minimal attainment level for all measurement objectives. He will move in and out of this module at his option.

In similar fashion the student will progress through the other modules of the system. The nature of the options may vary among modules, but within each module there will be options relative to attainment level, science area, instructional modes and media.

## Relationship to Other WETEP Elements

The Science Education Element is one part of the Wisconsin Elementary Teacher Education Program and as such is designed as an integrated part of that system. It is supported by and is supportive of many other elements of WETEP. This becomes particularly apparent when one studies the objectives of the science method subelement. There are many points of contact between this element and such elements as Curriculum and Instruction, Educational Psychology, Early Childhood Education, Culturally Diverse, Mathematics and Social Studies. Most of the objectives of the method subelement describe the behaviors in terms of teacher-student interactions. Much of the instruction of this subelement must necessarily be carried on within the context of or at least related to such clinical experiences in the Curriculum and Instruction Element as simulation, microteaching, classroom observation and intern teaching. The many interrelationships between the various WETEP elements will be increasingly apparent as the elements of the system are further developed for implementation.

# SOCIAL STUDIES EDUCATION

B. Robert Tabachnick, Chairman

Donald Ferris

## SOCIAL STUDIES EDUCATION

Abstract. The Social Studies Education Element, like many others within the WETEP system, involves extensive interaction with studies in other academic areas. Study in the Social Sciences will be initiated early in the student's college experience. Thus, at the point of entry into the WETEP Social Studies Education Element, many major understandings in the several disciplines of the Social Sciences will have been developed. Minimal competence for teaching elementary Social Studies will include work in at least two of such Social Science disciplines as history, anthropology, sociology, economics, political science, or geography. The understanding of major ideas in the Social Sciences and the development of skill in inquiry and valuing are thought of as taking place prior to a student's study about teaching particular content to children.

The Social Studies Education Element begins with the pre-assessment, orientation, and planning activities. The initial seminar experiences in this element are designed to provide meaningful analysis, interpretation, and integration of previously studied content in the Social Sciences. Further, seminars will project continued study in those areas and lay plans for the study of teaching strategies designed to implement knowledge, inquiry, and valuing in students' work with children.

The three subelements in the Social Studies Education Element are closely related and are in constant interaction with each other. Across subelements, the sequences of learning experiences in Informing Children in Social Studies, Inquiring with Children in Social Studies, and Valuing with Children in Social Studies will vary from student to student. Within the subelement, however, the same pattern of learning experiences will be followed in modules Knowing About, Applying, and Evaluating.

Within the Knowing module of the Informing Children subelement, WETEP students learn to identify and describe techniques for transmitting to children information which corresponds to their varied abilities and interests, and which is calculated to stimulate inquiry behavior. Within the Applying module, students learn to identify objectives, utilize appropriate instructional materials and media, measure growth through appropriate assessment techniques, and diagnose further pupil needs. In the Evaluation module, WETEP students develop skill in measuring their own growth as teachers. Cooperative judgments are made as to whether or not an acceptable level of attainment has been achieved. Furthermore, within this module the student's ability to measure and judge the effectiveness of materials and techniques for achieving specified objectives with particular children under given conditions is developed.

Illustrative objectives are offered for the Knowledge, Application, and Evaluation modules in the Valuing subelement.

# SOCIAL STUDIES EDUCATION

The Social Studies Education Element for WETEP is unique within the system in its very heavy reliance upon and continuing interaction with studies in academic or non-professional areas, as students explore teaching strategies to be used with children in social studies. Two major parts of the students' study--study in the social sciences and study in teaching strategies for social studies--are described in some detail in this brief description. These parts are in continual interaction, and although discussed in this paper in sequence, they must be considered to represent parallel development.

The first of these two parts, study in the social sciences, is initiated early in the student's college career. Thus, at the point of entry into the WETEP Social Studies Education Element, many major understandings in the several disciplines of the Social Sciences have been developed. Minimal competence for teaching elementary social studies will include work in at least two of such Social Science disciplines as history, anthropology-sociology, economics, political science, and geography. This work should be done in courses which have been selected because they give some attention to processes of inquiry in that discipline, and because their content includes an analysis of values and valuing within the social contexts that they explore. The sociology course "Methods of Sociological Inquiry" is an example of such a course. Its catalogue description follows.

> METHODS OF SOCIOLOGICAL INQUIRY. Scientific methods and their application in the analysis of society; procedures in testing sociological theory: problem definition, hypothesis construction, collection and evaluation of data. (Open to juniors or sophomores with consent of instructor. No course pre-requisite needed.)

Beyond such minimal study, students can extend their competence and background in the area of social studies, up to the completion of a minor or even a major in one social science discipline or the equivalent in course credits taken in a combination of social sciences. This would be likely for students identifying social studies as their major area of specialization within WETEP.

The Social Studies Education Element begins with the pre-assessment, orientation, and planning activities. The seminar associated with the orientation and planning for study in this element is designed to provide a meaningful analysis, interpretation, and integration of the social science study which has previously taken place. In addition, it will project continued study in those areas and plan for the study of teaching strategies designed to implement this knowledge, inquiry, and valuing in students' work with children.

This seminar will also function in such a way as to illuminate the way in which knowledge, methods of inquiry, and values from social sciences become a part of elementary school programs. This cooperative analysis by the student and his instructor will enable the student to decide whether he has completed minimal requirements in the Social Studies and should plan to become only minimally prepared in the teaching of Social Studies, or whether he may select the Social Sciences as an area in which to develop additional competence, perhaps extending to specialization. In the latter case, subsequent seminar experiences may be used at points where additional judgments are needed about continued meaningful exploration in the Social Sciences. Minimal work in the Social Sciences--understanding of major ideas, the development of skill in inquiry, and valuing--is thought of as taking place prior to a student's study about teaching particular content or skills to children. Acquiring Social Science competence and background is a process, however, which can take place throughout a student's active pre-service and in-service program. It is in this sense that continual interaction between work done in academic departments and the development of skill in teaching strategy go on as parallel developments.

There are three subelements in the Social Studies Education Element. These identify three essential skills in teaching social studies in children. The first of these subelements is concerned with the ability to develop skill in informing children; the second of these subelements deals with the developing of skill in inquiring with children; and the third of these subelements is concerned with the development of skill in valuing with children. Although these are treated as separate skills, all three subelements are very closely related to one another and are constantly in interaction. The statement that "information is an absolute prerequisite to inquiry", which appears below, suggests that students are likely to acquire some of the skills in informing children before they begin work on the second subelement. A major portion of the first subelement need not be completed before work in the second and third are begun. After some initial experiences in informing children, the sequence of learning experiences across subelements will vary from student to student.

Within all three subelements the same pattern of learning experiences is followed. The student's first step is knowing about, his second step is applying what he has come to know about, and his third step is evaluating his effectiveness in applying what he knows about either informing, inquiring, or valuing with children. Although the sequence within each subelement is the same, a series of connected units, one from each of the modules Knowing About, Applying, and Evaluating might precede other series of connected units. Within each series of connected units, the sequence from Knowing About to Applying to Evaluating would be followed.

## Subelement 1: Informing Children in Social Studies

The modules within the first subelement are designed to provide experiences which will help students understand specific techniques, strategies, materials, and programs which can be utilized in those learning situations when the essential task is to provide information. Much of a child's time in school is spent acquiring information about his social environment. Such information is an absolute prerequisite to inquiring. This information provides data which can be combined to produce order and structure. The data provide, through the identification of anomalous and discrepant factors, motivation to resolve the discrepancies.

Within the module Knowing About Ways of Informing Children, students learn to identify and describe techniques for transmitting information which respond to varied abilities and interests of children, and which are calculated to stimulate inquiry behavior on the part of children. These techniques include using varied materials and media for presentation as well as the organization of children into groups ranging in size from individual children (a "group" of one) to groups of more than one hundred children. The techniques also include those required to assess children's levels of understanding.

In the second module of the subelement Informing Children, Applying Knowledge, students plan for teaching and using such techniques for informing children as are appropriate to the group and the context within which they are to teach. Planning is followed by teaching within varied settings ranging from simulated teaching, to micro-teaching, to work with children in natural school settings. Both planning and teaching should evidence ability to: 1) identify and state objectives, 2) introduce these objectives to children and help children modify them, 3) identify and utilize materials, media, and patterns of classroom organization appropriate to the objectives, 4) measure growth through appropriate assessment techniques, and 5) diagnose further pupil needs and plan to satisfy them.

The third module in this subelement, Evaluation, is designed to provide an opportunity for each student, with the help of his instructor, to develop skill in measuring his own growth as a teacher. Cooperative judgments are made about whether an acceptable level of competence has been attained with respect to some identifiable skill in transmitting social studies information to children. These judgments lead to decisions about appropriate next steps for the student, which may indicate additional work or an exit so he may work toward development of other skills. One major purpose of this module is to develop the student's ability to be analytical about his own teaching and capable both in recognizing his own accomplishments and in finding ways to remedy his own inadequacies.

A second major purpose of this module is to develop the student's ability to measure and judge the effectiveness of materials and techniques for achieving specified objectives with particular children under given conditions. Skill in interpreting and designing simple field research projects is intended to develop a teacher who can interpret, use, and contribute to educational research which aims to improve school programs.

## Subelement 2: Inquiring with Children in Social Studies

The question "Why inquiry?" is simply another way of asking "Why history?" or "Why geography?". History is, in part, the processes of search within particular limits and according to particular standards. In order to have a valid experience with any social science discipline, children must engage at some level, and come to develop in some way, inquiry skills which create information in that discipline.

In the elementary school, as indeed in the social sciences themselves, the boundaries which have previously identified disciplines have come to be recognized as artificial aids to solving problems in understanding social arrangements and social history. Inquiry skills from many disciplines are developed through the instructional units within this module so that the student can help children resolve social studies problems which cross the boundaries of traditional disciplines and utilize multi-disciplinary approach.

The pattern of learning experiences within this subelement is the same as that described for the first subelement. The first module within the subelement has as its focus knowing about inquiry with children: potential objectives, techniques for using materials, media and grouping practices, and techniques of assessing children's growth in inquiry skills. The second module within the subelement focuses upon application, planning for teaching and teaching in different settings. The third module focuses upon evaluating the student's performance and developing the student's ability to understand the strengths and weaknesses of his teaching children to inquire about social events and social institutions.

## Subelement 3: Valuing with Children in Social Studies

The behavior of people in groups is inevitably a consequence of the values they hold. The modules within this subelement have as their purpose developing in students skill in helping children identify their values, value conflicts, and the relation between values and the ways in which they and other people act.

Within this subelement the three modules knowing, applying, and evaluating skill in helping children value are developed through a listing of detailed illustrative objectives.

## VALUING SUBELEMENT

A. Knowledge Objectives

The WETEP Social Studies teacher:

1. can define "values" and "valuing".
2. can list signs of value confusions in children.
3. can list didactic ways of teaching values to children and their justifications and limitations.
4. can verbalize the relationship between a child's values, his style of life and his surroundings.
5. can describe techniques for developing values in children which are alternative to the traditional didactic approaches, e.g., Raths, Oliver.
6. can list examples of student statements and several key-words which relate to the following value indicators:
   a. attitudes
   b. aspirations
   c. purposes
   d. interests
   e. activities
7. can list and describe the following ways of initiating value discussions to clarify value confusions:
   a. quotations
   b. pictures without captions
   c. a scene from a play or movie
   d. provocative questions
   e. other sources of materials
8. can describe the purposes for and the uses of such techniques of value clarification as:
   a. role playing
   b. the contrived incident
   c. open-ended questions
   d. the public interview
   e. decision making interview
   f. voting
   g. student reports
   h. action projects
9. can describe a plan for initiating and utilizing the processes of valuing in an elementary school class.
10. can describe rating scales and observation techniques appropriate for measuring value-related behaviors which are outcomes of teaching valuing.
11. can distinguish between behavioral, procedural and substantive values (Fenton) and can speak to rationales for their inclusion in or exclusion from the elementary school social studies.

B. Application Objectives

The WETEP Social Studies teacher:

1. can select and administer appropriate valuing-related measurement techniques and devices and interpret the data collected.

2. can write appropriate valuing-related behavioral objectives for individual students based upon data collected from selected measurement techniques.
3. is able to select and implement appropriate teaching strategies using materials and equipment calculated to accomplish specific behavioral objectives related to value clarification in elementary school children. (For examples of techniques and strategies, see Knowledge Objectives above.)

C. Evaluation Objectives

The WETEP Social Studies teacher:

1. becomes increasingly competent and independent in evaluating the appropriateness and effectiveness of his teaching strategies and materials in effecting desired behavior change in individual children, small groups of children and whole classes of elementary school children.
2. becomes increasingly competent in identifying, selecting, and engaging in learning and practice activities subsequent to his evaluation of his own needs in gaining skill in developing values in children.
3. can evaluate the effectiveness of a teaching strategy or technique utilizing certain materials and equipment in accomplishing a desired objective related to valuing behavior in elementary school children.
4. is skilled in applying criteria for judgment in determining what values are worth clarifying.
5. is able to apply value-related external evaluation criteria to teacher-created materials.

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# WISCONSIN

# ELEMENTARY TEACHER EDUCATION PROJECT

## Volume III: Element Specifications

School of Education
University of Wisconsin
Madison, Wisconsin

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# ELEMENT SPECIFICATIONS

## Volume III

### Introduction

The instructional activities designed for the Wisconsin Elementary Teacher Education Project (WETEP) are described in papers representing each of the nineteen elements which make up the WETEP program. Volume III includes twelve elements: Curriculum and Instruction (CI), Art Education (AR), Health Education (HE), Safety Education (SA), Leisure Education (LE), Guidance (GU), Physical Education (PE), Media and Technology Education (ME), Music Education (MU), Early Childhood Education (EC), Culturally Diverse (CD), and Special Education (SE). Descriptions of other elements are included in Volume II. Figure 1 illustrates the relation of the contents of this volume to the other three volumes of this report.

The extent to which various WETEP elements have been delineated varies considerably from one element to the next. While some elements are described in considerable detail, others are represented largely in outline form. Each element is organized according to the general specifications of the systems model described in "A Cybernetic System for WETEP: A Model Design for the Preparation of Teachers."[1] The reading of the papers in this volume will be enhanced if one understands the meaning of the symbols used in the flowcharts included in the element reports.

To facilitate the reading of the flowcharts, a variety of shapes are used for the figures and a variety of letters and numerals are used within these figures. Each element is represented by a two-letter code as in Screening (SR), in Educational Psychology (EP), and in Curriculum and Instruction (CI). Entry, exit and decision points are numbered within the flowchart. Two-digit numerals represent points within the elements; three-digit numerals represent points within the subelements; and four-digit numerals represent points within the modules. The geometric symbols used and a description of their meaning follows.

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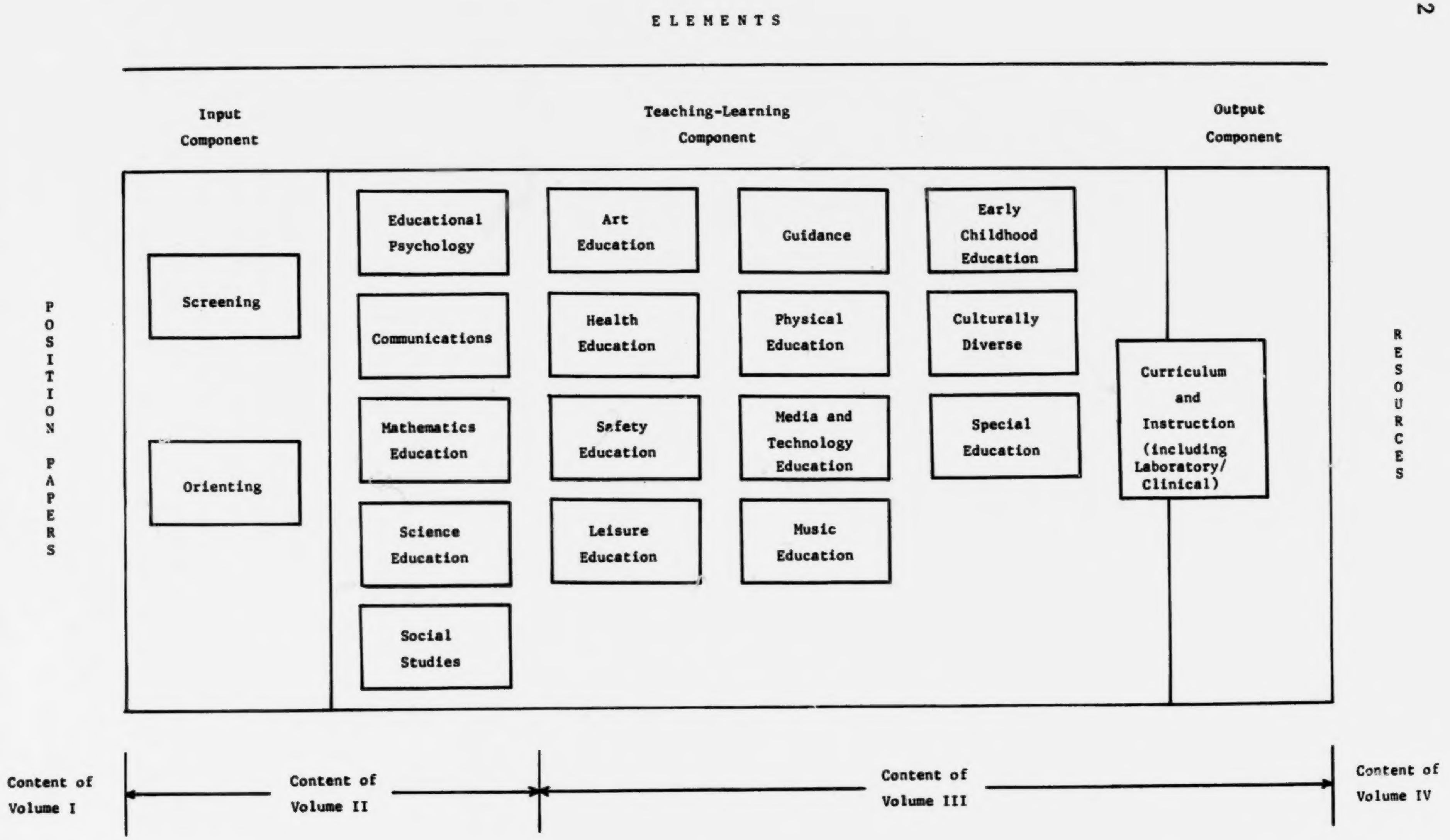
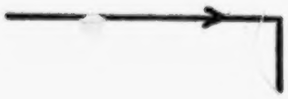
[1] Albert H. Yee, Position Paper, Volume I, Wisconsin Elementary Teacher Education Project Report.


ELEMENTS
Input Component
Teaching-Learning Component
Output Component
POSITION PAPERS
Screening
Orienting
Educational Psychology
Communications
Mathematics Education
Science Education
Social Studies
Art Education
Health Education
Safety Education
Leisure Education
Guidance
Physical Education
Media and Technology Education
Music Education
Early Childhood Education
Culturally Diverse
Special Education
Curriculum and Instruction (including Laboratory/ Clinical)
RESOURCES
Content of Volume I
Content of Volume II
Content of Volume III
Content of Volume IV

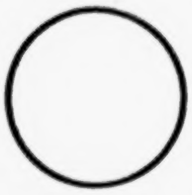
ORGANIZATION OF PAPERS WHICH DESCRIBE

THE WISCONSIN ELEMENTARY TEACHER EDUCATION PROJECT

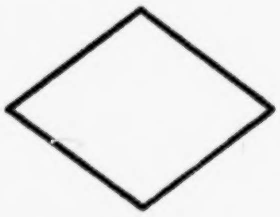
FIGURE 1



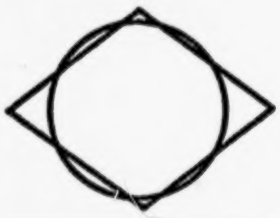
__Channel__ A path indicated by a flowline arrow through which communication flows within the system is a channel. The arrowhead indicates the direction communication flows.



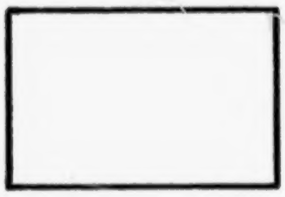
__Entry and Exit Points__ Entry and exit points are points at which students may enter or leave components, elements, modules, etc.



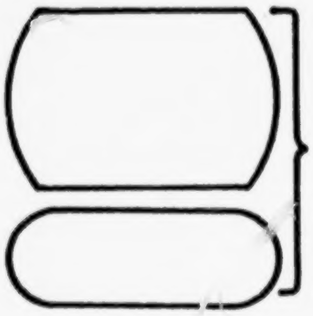
__Forced Decision Point__ A point where the student is forced by the system to enter one of several alternative channels is a forced decision point.



__Free Decision Point__ A point where the system allows the student to make his own choice of which alternative channel he will enter is known as a free decision point.

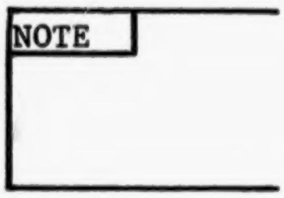


__Simple Procedure__ The simple procedure symbol indicates a set of objectives-operations containing no decision nor entry and exit points.



__Complex Procedure__ The complex procedure symbols indicate sets of objectives-operations which could be expanded into another detailed flowchart involving entry and exit points, decision points, and simple and complex procedures.

__Replication__ This symbol shows replication of identical structures.



__Annotation__ This symbol is used for the addition of descriptive comments or explanatory notes.

# CURRICULUM AND INSTRUCTION ELEMENT

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## CURRICULUM AND INSTRUCTION ELEMENT

Abstract. The Curriculum and Instruction Element is in constant interdependence with all other elements of WETEP as together they provide the total pattern of instruction designed to produce the WETEP teacher. A major concern of the Curriculum and Instruction Element is the identification and description in measurable terms of those teacher functions and behaviors basic to successful teaching, independent of any single content area. Experiences in each instructional unit are structured with a breadth and depth of involvement appropriate for each student or teacher as dictated by his interests, needs, characteristics, and capabilities.

This Element includes four subelements which identify the broad characteristics that the WETEP teacher will acquire as a result of his participation in the program. Each subelement has from three to six modules which identify specifically the scope of the subelement. Illustrative objectives focus on the competencies to be developed in modules and develop criteria for assessing progress and diagnosing performance levels.

Subelement I: The WETEP teacher is able to select appropriate data sources and diagnose data relevant to the development of objectives for learners.

Subelement II: The WETEP teacher is able to formulate appropriate objectives.

Subelement III: The WETEP teacher is able to translate curriculum plans into operational teaching-learning behaviors.

Subelement IV: The WETEP teacher is able to assume a high degree of personal and professional responsibility.

The various functions and responsibilities of the teacher may be identified as preactive, interactive, and postactive. Most of the instructional units concerned with teacher functions in the first three subelements will be found to fall into these three classifications. There are a number of teacher characteristics of such a nature that they do not fall neatly into pre-, inter-, and post-active designations. Behavioral objectives presented in the fourth subelement will be demonstrated by the total student engagement in various instructional units. For example, personal responsibility, as a cumulative characteristic, permeates all other teacher activities as the student pursues his unique pattern of learning experiences in WETEP.

The Curriculum and Instruction Element provides instructional modules each of which includes various levels and forms of experience. A specific teaching function may be studied at the para-teacher competency level, or at levels appropriate for teachers, specialists, or master teachers. As the WETEP student proceeds through his Curriculum and Instruction program, he may channel his experiences into any of a number of possible areas of specialization, such as multi-media utilization or production, analysis of teacher classroom behavior, group dynamics, or diagnosis of pupil needs. The myriad behaviors and functions that make up teaching provide an ever expanding area of study which, in WETEP, begins with the student's first professional experience and continues until his retirement from the profession.

## Rationale

The Curriculum and Instruction Element focuses on the study of the functions which comprise the "common core" of teacher education. It is the element which transforms the conceptual and normative data about teaching and learning into actual teaching practice.

A major concern of this element is the identification and description in measurable terms of those teacher functions and concomitant behaviors basic to successful teaching independent of any single discipline or content area. The relations among these various functions are identified and systematically programed in a variety of laboratory and clinical learning experiences culminating with that part of the clinical experience which emphasizes total teaching responsibility.

The Curriculum and Instruction Element is also concerned with the identification of the personal characteristics crucial to the successful performance of these teacher functions. Experiences are designed to aid in both the analysis and the development of these personal characteristics as they relate to different teaching functions.

Specific teacher functions ranging from the identification of different data sources relevant to the development of objectives for learners to the evaluation of specific classroom strategies are systematically outlined in the Curriculum and Instruction subelements and modules. The myriad behaviors and functions that make up teaching are seen as providing an ever expanding area of study which, in WETEP, begins with the student's first professional experience and continues until his retirement from the profession.

The Curriculum and Instruction Element receives its substance and structure from the two basic assumptions which follow:

1. The responsibilities of a teacher are both numerous and complex. Teachers perform many functions with and without learners. It is increasingly obvious that many, if not most, teachers are neither capable of nor have they sufficient time and energy to engage productively in all Curriculum and Instruction operations. It is also increasingly apparent with the advent of more flexible internal organizational patterns of elementary schools that a team of several teachers with specialized competencies can more effectively perform the variety of essential functions which make up the composition of Curriculum and Instruction.

The development and implementation of the Curriculum and Instruction Element of WETEP is based upon meeting the following three requirements:

a. That the numerous components of Curriculum and Instruction be thoroughly identified and defined, and that their relatedness be clarified.

b. That the individual capabilities and personal qualities of each student be thoroughly analyzed in relation to the various Curriculum and Instruction operations.

c. That data continually and systematically gathered as the student engages in these functions and operations be used to assist him in making appropriate decisions about the specific strands of study and/or area(s) of speciality commensurate with his abilities, characteristics, and interests.

2. The preparation of teachers necessitates a focus on both knowledge of the conceptual and normative data about teaching and on the translation of this knowledge into teaching practice. This focus in turn dictates that the responsibilities be shared between the University of Wisconsin and cooperating local schools. The WETEP feedback and intercommunications systems have been designed to facilitate continuing interaction between WETEP staff in the public schools and those staff members on campus.

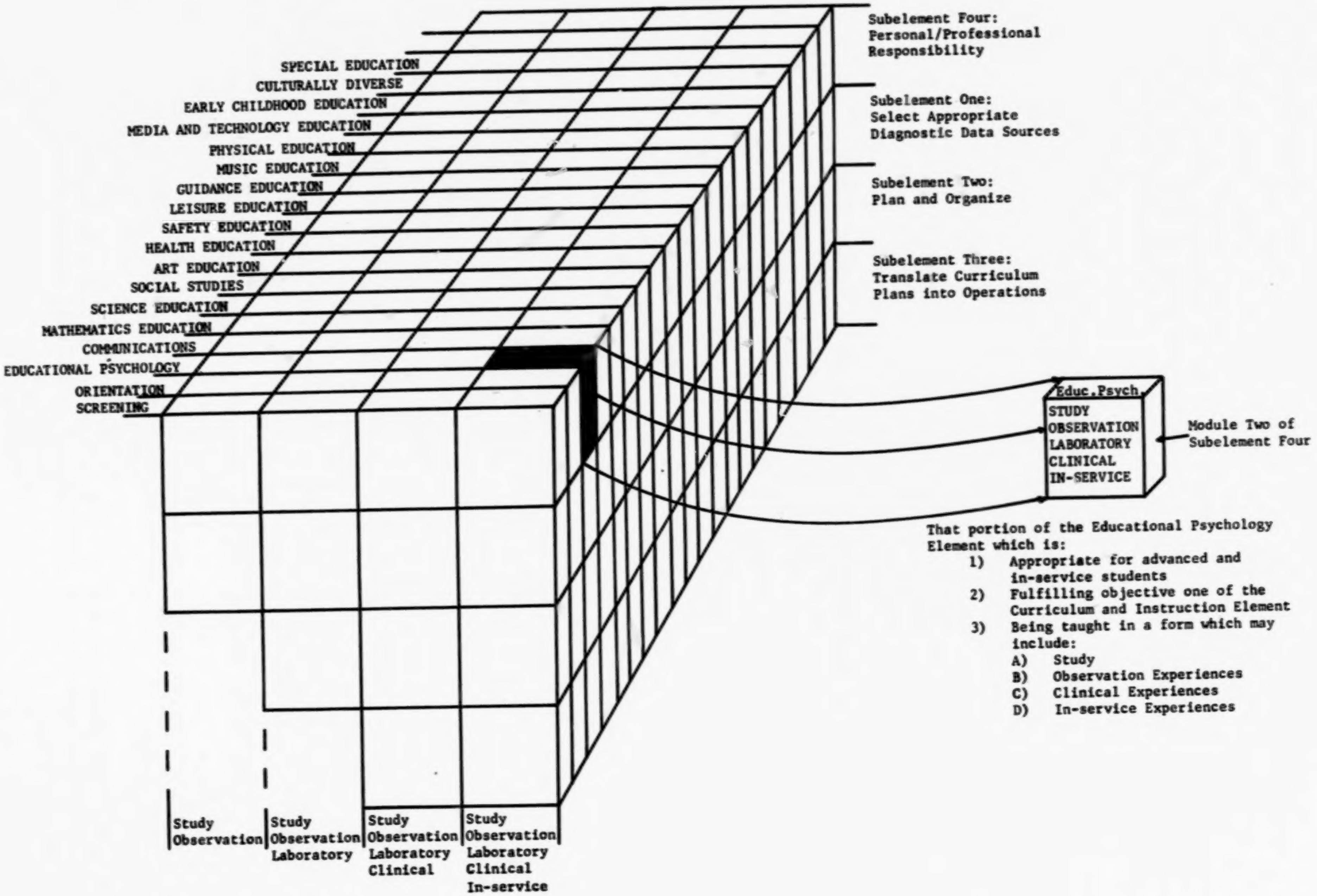
The supervision of students in laboratory and clinical settings is basically a teaching process. Specialized personnel in both the universities and in the local schools must be prepared to work with these students. A high level of competency in teacher observation, feedback, analysis, and instructional planning is demanded by both university and public school personnel in working with students and in-service teachers. Thus, in WETEP, a comprehensive and systematic analysis of preactive, interactive, and post active teacher behaviors is basic to the mutual responsibility of both the university and the schools.

## Teacher Functions

The Curriculum and Instruction Element is systematically organized into a number of distinct but related teacher functions which comprise the broad processes of curriculum development and instructional implementation. Much of the knowledge needed to successfully engage in these functions is initially gained through study in one or more of the modules of other elements. In a systematic manner the Curriculum and Instruction Element supplements and extends the work initiated in the other elements.

Curriculum is viewed as an organization of behavioral objectives, corollary learning activities, and a systematic plan for evaluation.

Instruction is viewed as the specific curriculum plan finalized and put into action; it is the action function of the teachers, learners, materials and resources; it is structured by scheduled times and planned spaces and facilities; and its movement is toward the behavior described in the instructional objectives.


SPECIAL EDUCATION
CULTURALLY DIVERSE
EARLY CHILDHOOD EDUCATION
MEDIA AND TECHNOLOGY EDUCATION
PHYSICAL EDUCATION
MUSIC EDUCATION
GUIDANCE EDUCATION
LEISURE EDUCATION
SAFETY EDUCATION
HEALTH EDUCATION
ART EDUCATION
SOCIAL STUDIES
SCIENCE EDUCATION
MATHEMATICS EDUCATION
COMMUNICATIONS
EDUCATIONAL PSYCHOLOGY
ORIENTATION
SCREENING
Subelement Four: Personal/Professional Responsibility
Subelement One: Select Appropriate Diagnostic Data Sources
Subelement Two: Plan and Organize
Subelement Three: Translate Curriculum Plans into Operations
Educ.Psych.
STUDY
OBSERVATION
LABORATORY
CLINICAL
IN-SERVICE
Module Two of Subelement Four
Study Observation
Study Observation Laboratory
Study Observation Laboratory Clinical
Study Observation Laboratory Clinical In-service

That portion of the Educational Psychology Element which is:
1) Appropriate for advanced and in-service students
2) Fulfilling objective one of the Curriculum and Instruction Element
3) Being taught in a form which may include:
   A) Study
   B) Observation Experiences
   C) Clinical Experiences
   D) In-service Experiences

A VISUAL REPRESENTATION OF THE RELATIONSHIP BETWEEN THE CURRICULUM AND INSTRUCTION ELEMENT AND THE OTHER WETEP ELEMENTS

FIGURE 1

Teaching and learning take place within the instructional operation. Teaching involves the various behaviors of the teacher within the physical, social, and psychological environment of the instructional operation as he acts, interacts or reacts with and among learners. Learning is evidenced by the various behaviors of the learner as he moves toward or engages in the desired behavior identified in the curricular plan. These behaviors may be cognitive, affective, and/or psychomotor in nature.

The teacher not only teaches within the instructional setting but operates within curricular, organizational, and post-instructional settings as well. Jackson has conceptualized the responsibilities of the teacher into pre- and post active as well as interactive functions. This classification was seen as useful in organizing units of study for prospective teachers. The many different functions which a teacher performs as well as the specific components of "teaching" within the instructional operation are systematically outlined in the WETEP Curriculum and Instruction Element.

The Curriculum and Instruction Element of WETEP includes four subelements which identify the broad characteristics that the WETEP teacher will acquire as a result of his participation in the program. These are identified along the right hand parameter of the three dimensional paradigm as: personal/professional responsibilities, selecting and diagnosing appropriate data sources, planning and organizing, and translating curriculum plans into operations. Each subelement has from three to six modules which identify specifically the scope of the subelement. Illustrative objectives focus on the competencies to be developed in modules and develop criteria for assessing progress and diagnosing performance levels.

Subelement I: The WETEP teacher is able to select appropriate data sources and diagnose data relevant to the development of objectives for learners.

Module 1: The WETEP teacher is able to diagnose data reflecting the needs and interests of learners.

Module 2: The WETEP teacher is able to diagnose data reflecting the needs and interests of society.

Module 3: The WETEP teacher is able to diagnose the data with regard to the accumulated knowledge of the profession.

Subelement II: The WETEP teacher is able to plan and organize for instruction.

Module 1: The WETEP teacher is able to formulate appropriate objectives.

Module 2: The WETEP teacher is able to select appropriate teaching strategies and learning activities for the realization of objectives.

Module 3: The WETEP teacher is able to select appropriate resources for the realization of objectives.

Module 4: The WETEP teacher is able to select physical environments appropriate to differentiated teaching-learning operations.

Subelement III: The WETEP teacher is able to translate curriculum plans into operational teaching-learning behaviors.

Module 1: The WETEP teacher is able to structure the physical elements of the operational environment.

Module 2: The WETEP teacher is able to utilize socio-psychological data to establish communication patterns.

Module 3: The WETEP teacher is able to give clear and explicit directions to initiate and maintain a teaching-learning activity.

Module 4: The WETEP teacher is able to use teaching strategies appropriate to the dynamics of the teaching-learning activity.

Module 5: The WETEP teacher is able to analyze and evaluate the teaching-learning activity.

Subelement IV: The WETEP teacher is able to assume a high degree of personal and professional responsibility.

Module 1: The WETEP teacher holds fundamental attitudes of human acceptance.

Module 2: The WETEP teacher is a responsible member of the teaching profession.

Module 3: The WETEP teacher strives to attain the highest personal standards consonant with the teaching role.

As shown in the left-hand column in Figure 1 each of the other elements of study in the Wisconsin Elementary Teacher Education Project intersect with the Curriculum and Instruction Element. That is to say all units of study offered in a teacher education program are to be translated at sometime in some way into teacher behavior as practiced in the Curriculum and Instruction Element. Each element is broken down into subelements, modules, instructional units, and finally instructional objectives.

The following section of this document lists some illustrative objectives for each module identified under each of the four subelements into which the Curriculum and Instruction Element has been organized. These illustrative objectives serve as the organizing centers around which instructional units can be developed.

## Illustrative Objectives for Subelements I & II

Subelement I: The WETEP teacher is able to select appropriate data sources and diagnose data relevant to the development of objectives for learners.

Module 1: The WETEP teacher is able to select appropriate data sources and diagnose data relevant to the development of objectives for learners.

Knowledge

a. Knows the characteristics of individual students in their classes

b. Knows the way a student may indicate his interests and/or needs

Comprehension

a. Is able to interpret the observed behavior of the students in their classroom

b. Is able to interpret the accumulated data about students

Application

a. Is able to prepare records based upon the accumulated data about students

b. Is able to use diagnostic instruments for interpretation of needs and interests of children

Analysis

a. Is able to analyze the accumulated records of the learner

b. Is able to analyze the observed behavior in the classroom

Synthesis

a. Can design instruments to inventory the physical needs of students

b. Is able to synthesize information about students in their classrooms

Evaluation

a. Is able to evaluate the instruments for assessing the needs and interests of students

b. Is able to evaluate information about students in their classrooms

Module 2: The WETEP teacher is able to diagnose data reflecting the needs and interests of society.

Knowledge

a. Knows the resources and procedures available for determining the structure and values of the community

b. Knows various ways in which government affects education

c. Knows the contemporary world situation and the effects it has on education

d. Knows effects of various theologies upon education (international, national, state, and local)

e. Knows effects of ethnic and social pressures on education

f. Knows effects of cultural aspects of society on education

Comprehension

a. Knows of community institutions other than the school which contribute to the education of the pupil

b. Can classify available procedures for determining the structure and values of the community

Application

a. Can use the test and non-test resources available for the study of community structure and value

b. Can coordinate the school program with other community institutions

Analysis

a. Is able to analyze the test and non-test resources available for the study of community structure and values

b. Is able to analyze the effect of other youth organizations in the education program

Synthesis

a. Can devise instruments for the discovery of community values and community structure

b. Can identify the interrelationships between other community agencies and the public school program

Evaluation

a. Can assess the impact of various community values on the educational programs

b. Can compare the relative importance of other community institutions in the education of the child

Module 3: The WETEP teacher is able to diagnose the data with regard to the accumulated knowledge of the profession.

Knowledge

a. Knows the written materials available relevant to different aspects of the instructional program

b. Knows of the non-written materials available relevant to different aspects of the instructional program

Comprehension

a. Is able to categorize and interpret various written materials of a professional nature in the areas of a teacher's curricular concern

b. Is able to understand various types of non-written professional data

Application

a. Can employ various written materials in the diagnosis of pupil needs

b. Can employ non-written materials or resources in the development of diagnostic schemata

Analysis

a. Is able to comprehend the interrelationships among the ideas obtained from different sources of written data

b. Is able to differentiate research data from theoretical constructs

Synthesis

a. Is able to interrelate the data gained from different sources of written materials

b. Is able to develop generalizations from various non-written sources

Evaluation

a. Is able to assess the value of the various professional books and journals in relation to various aspects of the program

b. Is able to apply given criteria to the judgments and opinions of other members of the professional community

Subelement II: The WETEP teacher is able to plan and organize for instruction.

Module 1: The WETEP teacher is able to formulate appropriate objectives.

Knowledge

a. Knows the purpose of behavioral objectives

b. Knows the elements of an objective

c. Knows that there are several forms of content or substance

d. Knows that there are three major classifications of behavior in an objective

Comprehension

a. Can interpret the taxonomical behavior in an objective

b. Can interpret the content through which the behavior is to be developed

Application

a. Can write general behavioral objectives

b. Can write specific behavioral objectives

c. Can apply knowledge of individual differences to objectives

Analysis

a. Can analyze behavioral objectives

b. Can analyze to detect inconsistencies in a behavioral objective

Synthesis

a. Can coordinate several different contents with a single behavior

b. Can synthesize several lower level behaviors in the taxonomy into a higher level behavioral objective

Evaluation

a. Can evaluate a behavioral objective according to such criteria as clarity and appropriateness

b. Can evaluate a behavioral objective according to such internal criteria as consistency, precision, etc.

c. Can evaluate a behavioral objective according to such external criteria as consistency, precision, etc.

Module 2: The WETEP teacher is able to select appropriate teaching strategies and learning activities for the realization of objectives.

Knowledge

a. Knows a variety of strategies using verbal behavior--telling

b. Knows a variety of strategies using verbal behavior--reading

c. Knows a variety of strategies using verbal behavior--questioning

d. Knows a variety of teaching techniques using non-verbal behavior

e. Knows a variety of strategies combining verbal and non-verbal behavior

Comprehension

a. Is able to interpret and observe classroom interaction in terms of Bellack's concept of instructional moves

b. Is able to classify student participation in an observed classroom interaction according to Aschner-Gallagher's classifications

Application

a. Is able to select and develop classroom questions intended to solicit various levels of cognition on the part of learners using the materials of Bloom and Sanders

b. Is able to select and develop either direct or non-direct verbal statements to be used in his verbal behavior according to Flanders' Model

Analysis

a. Is able to analyze the possible relationships between selected non-direct verbal statements and an instructional objective

b. Is able to analyze a selected teaching strategy which might produce soliciting moves on the part of learners

Synthesis

a. Is able to incorporate elements of various classroom observational techniques in developing classroom questioning strategies

b. Is able to construct an instructional plan incorporating a number of verbal and non-verbal instructional techniques

Evaluation

a. Is able to evaluate a selected teaching strategy

b. Is able to evaluate a selected structure or classroom management technique

Module 3: The WETEP teacher is able to select appropriate resources for the realization of objectives

Knowledge

a. Knows how to secure relevant instructional materials

b. Knows the wide variety of instructional materials, media and resources that are available

c. Knows media resources for working with children

Comprehension

a. Is able to categorize appropriate materials relevant to specific curricular areas

b. Is able to understand the operating principles of the media appropriate for working with students

Application

a. Is selective in securing instructional materials

b. Can apply knowledge of audio-visual media in materials selection

Analysis

a. Is able to analyze the relationship between a selected media and the objective it is to support

b. Is able to analyze the needs of the specific curricular area and select appropriate material accordingly

Synthesis

a. Is able to select materials and media which are complementary to each other

b. Is able to maintain a continuity in the selection of materials

Evaluation

a. Can evaluate a textbook

b. Can determine the feasibility of a suggested resource

Module 4: The WETEP teacher is able to select physical environments appropriate to differentiated teaching-learning operations.

Knowledge

a. Knows the physical elements conducive to learning

b. Knows the psycho-social factors which may influence the instructional situation

Comprehension

a. Can predict how physical factors will influence instructional situations

b. Can predict how psycho-social factors will influence the instructional situation

Application

a. Is able to select the physical environments to meet the needs of the instructional situation

b. Is able to determine the grouping needs of individuals

Analysis

a. Can analyze the way various physical elements effect the instructional situation

b. Can analyze the affects of individual, small group, and large group development in various instructional situations

Synthesis

a. Can arrange the physical environment, social and psychological elements to produce the setting most conducive to learning

b. Is able to integrate aspects of the classroom environment with the community environments

Evaluation

a. Can evaluate the effects of various types of grouping in accomplishing the educational objective

b. Can assess the influences of the physical environment on the instructional situation

Each of the illustrative objectives listed can be engaged in by the learner in a series of forms. These forms represent the third dimension of the paradigm in Figure 1 and appear as a continuum of experiences across the lower edge of the model. Some illustrative forms in which the teacher as a learner may engage in these functions are as follows:

Theory

lectures
readings
discussions
interviews

Observation

stills
films
video
teachers
children
classrooms

Laboratory

role-playing
simulations
micro-teaching (a limited number of learners for a limited amount of time with specific foci)

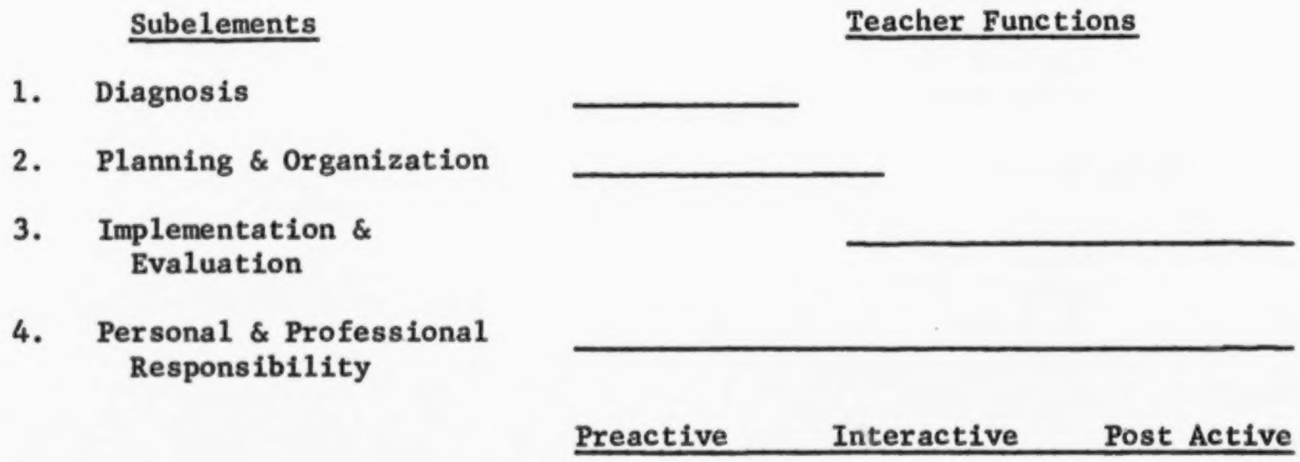
Clinical

extended teaching with total responsibilities but incorporating a substantial amount of observation and laboratory experiences--occurs before and continues after certification

In Figure 1 a cube has been extracted from the model to illustrate the intersection of another learning element with a Curriculum and Instruction Element in the form of study observation. This would be an instructional unit to accomplish one instructional objective of one of the modules under subelement number 4, Personal/Professional Responsibilities. The student in this instance would be involved initially in learning experiences in the form of lectures and reading in an Educational Psychology module. Later he would move within this cube representing an instructional unit into learning experiences which involved observation and finally laboratory and clinical application.

The teacher in this program is seen as a continuing learner from his admission to the teacher education program until his retirement. Experiences in each instructional unit are structured with a breadth and depth of involvement appropriate for each student or teacher as dictated by his interests, needs, characteristics, and capabilities.

The four subelements, broken down into corollary modules and units, represent a systematic breakdown of the various functions and responsibilities of the teacher. As noted earlier, these functions may be identified as preactive, interactive, and post active in nature. As seen in Figure 2, the four subelements may be broken down into instructional units concerned primarily with teacher functions falling into each of these three classifications.


Subelements
Teacher Functions
1. Diagnosis
2. Planning & Organization
3. Implementation & Evaluation
4. Personal & Professional Responsibility
Preactive
Interactive
Post Active

Organization of the Curriculum and Instruction Element
Figure 2

The following is a list of illustrative teacher functions inherent in the WETEP Curriculum and Instruction Element as they fall within each of these three classifications.

Preactive Functions

Identifies data sources relevant to the development of normative curricular objectives for learners

Selects data relevant to the development of normative curricular objectives for learners

Considers data in regard to: the needs and interests of learners, the needs and interests of society and various sub-communities, and the accumulated knowledge of the profession

Translates curricular objectives into instructional objectives for individual learners in specific situations

Applies criteria of appropriateness, feasibility, precision, specificity, and consistency to this process of development and translation from the level of educational objectives to instructional objectives

Selects corollary teaching-learning experiences meeting the criteria of appropriateness, feasibility, and consistency

Organizes these teaching-learning experiences into: organizing elements (the basic concepts, skills, and attitudes) extending throughout a continuing educational sequence and organizing centers appropriate to the identified needs, interests, or knowledge identified.

Selects corollary resources (human and non-human) and materials meeting the criteria of appropriateness, feasibility and consistency

Selects corollary physical environments appropriate to the differentiated teaching-learning experiences

Interactive

Structures the physical environment by arranging equipment and materials and attending to factors influencing physical comfort and convenience

Structures the social environment by using preactive instructional objectives, diagnostic information, and planning to deploy learners for specific teaching-learning activities

Structures the psychological environment by creating a learning climate consistent with preactive information and conducive to the dynamics of the teaching-learning activity

Initiates and maintains teaching-learning activities with clear and explicit directions appropriate to the selected constituents of the teaching strategy

Uses constituents of a teaching strategy appropriate to the dynamics of the planned teaching-learning activity

Post Active

Reconstructs and/or describes a teaching-learning activity using a number of perspectives including socio-psychological interactions, cognitive processes, and communication pattern(s) involved in the activity

Analyzes a teaching-learning activity by identifying the effects of the related components of the activity including objectives outlined, time and resources used, physical environment structured, and deployment of teachers and learners.

Evaluates a teaching-learning activity by determining the degree of congruence between preactive and interactive functions.

Uses the data gained in describing, analyzing, and evaluating previous teaching-learning activities to move back into preactive planning and organization of further teaching-learning activities

In addition to teacher functions which can be classified as preactive, interactive, or post active, there are a number of teacher characteristics and responsibilities of such a nature that they do not fall neatly into pre-, inter- and post active teacher activities. These permeating responsibilities are identified in subelement four of the Curriculum and Instruction Element. Behavioral objectives presented in this subelement will be facilitated by the totality of instructional units engaged in by the student teacher. For example, personal responsibility is a characteristic that is called for in all of the learning experiences engaged in by the student teacher and is a cumulative process facilitated by the continuing data gathered on the student as he engages in his unique pattern of learning experiences in the WETEP program.

### The Student as an Individual

In WETEP each individual student will engage in an educational program unique to his needs and abilities. The Curriculum and Instruction Element provides instructional modules each of which includes various levels and forms of experiences in which students might engage. A specific teaching function may be studied at the para-teacher competency level, or at levels appropriate for teachers, specialists, or master teachers. The student may also approach a specific teaching function via many different forms. This means that in the study of a given module the learner may be involved in a verbal presentation of the modular content, in several different visual observations of the topic, in a simulation of the topic, in a micro-teaching experience related to the topic, in a variety of other laboratory experiences, or in experiences related to the topic during his clinical experience.

The WETEP program, through its comprehensive and explicit behavioral criteria for each instructional unit, provides for a continuing assessment of student progress which facilitates self-pacing and encourages student involvement in a continuing process of decision making pertinent to his continuing professional study.

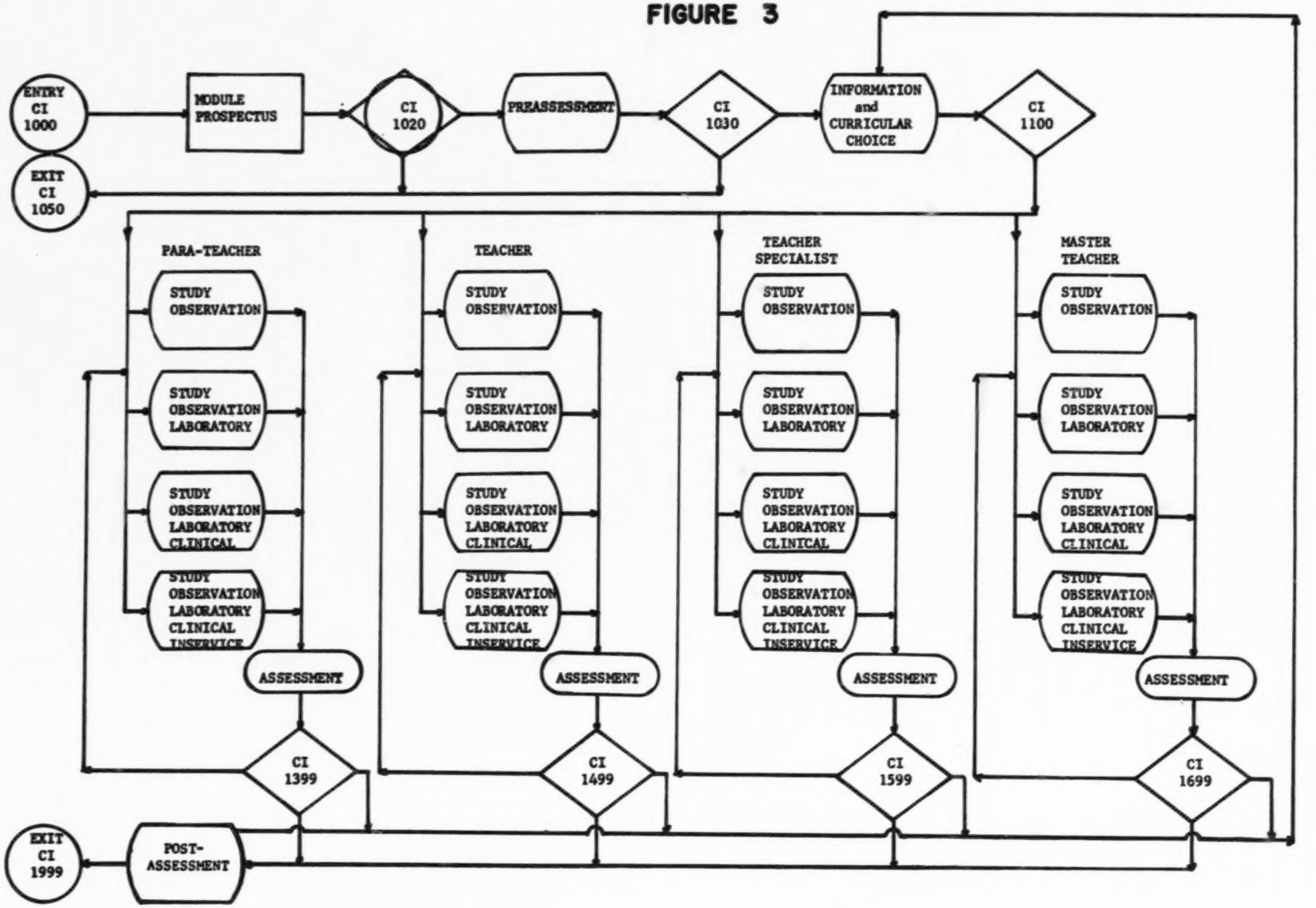
As the individual student continues through the program his primary role may be differentiated on a horizontal hierarchy which ranges from the para-teacher, to a teacher with limited interactive instructional responsibilities, to the master teacher with extended competency in the areas of curriculum development and instructional implementation. The student may channel his experiences into any of a number of possible areas of specialization. Within the Curriculum and Instruction Element, such areas of specialization might include multi-media utilization or production, analysis of teacher classroom behavior, group dynamics, or diagnosis of pupil needs. The length of time, the level, and the form of the learning experiences in the Curriculum and Instruction Element will vary as each teacher engages in enough learning experiences to articulate his specific interests and competencies as a teacher and to pursue further experiences on these bases. The paradigm offered as Figure 1 demonstrated that the Curriculum and Instruction Element is in constant interdependence with all other elements as together they provide the total pattern of instruction designed to produce the WETEP teacher.

The modular flow chart in Figure 3 illustrates the variety of avenues the student/teacher may pursue as a unique individual in obtaining lifetime professional excellence concomitant with his interests and abilities. The student enters the module at CI 1000 and receives a prospectus of the modular content.

At CI 1020 he may then exit, thus leaving the module, or proceed to a Preassessment which serves as a guide in planning and selecting further learning experiences. At point CI 1030, the student again has the option of leaving the module or proceeding into an instructional unit. The unit may be entered at whichever competency level or form the preassessment indicates as most suitable for the individual. Again, it should be noted that this choice will determine whether the student remains in the Curriculum and Instruction Element or intersects with a modular instructional unit in another element.

# A GENERAL MODULE FOR THE CURRICULUM & INSTRUCTION ELEMENT

FIGURE 3


ENTRY CI 1000
MODULE PROSPECTUS
CI 1020
PREASSESSMENT
CI 1030
INFORMATION and CURRICULAR CHOICE
CI 1100
EXIT CI 1050
PARA-TEACHER
TEACHER
TEACHER SPECIALIST
MASTER TEACHER
STUDY OBSERVATION
STUDY OBSERVATION LABORATORY
STUDY OBSERVATION LABORATORY CLINICAL
STUDY OBSERVATION LABORATORY CLINICAL INSERVICE
ASSESSMENT
CI 1399
CI 1499
CI 1599
CI 1699
POST-ASSESSMENT
EXIT CI 1999

Upon completion of the module at a given level and form, the student is assessed and, at CI 1399, again makes another choice. One option might be to return directly to another form at the same level. This choice might result in an intersection with another element of WETEP. A second option is to proceed to a post-assessment and leave the module for an indeterminate time. Finally, he may return for further Information and Curricular Choice which would again offer the opportunity to enter a new unit, form, or level based on the cumulative assessment of his growth, interest and competencies.

It should be noted that whereas the forms are not necessarily hierarchical, the levels are. It is expected that a teacher would know everything at the Para-teacher level, but not necessarily at the Master Teacher level while the master teacher would have the activities of both incorporated into his program. The student may exercise the option to stop at any one of the four levels without proceeding further. Figure 4 offers an illustration of the various levels that might be involved in one unit and form.

## Illustrative Content for a Teaching Strategies Module

The translation or implementation of curriculum plans into effective classroom behavior is the third subelement within the Curriculum and Instruction Element. Module number four of that subelement is the utilization of teaching strategies or actions appropriate to the dynamics of the teaching-learning activity. The various parameters of a teaching strategy are outlined below as they comprise the parts that can be programmed together in a number of ways to make up instructional units.

The teacher in the classroom employs a variety of strategies in moving his learners into and through a like variety of experiences. These activities are corollary to instructional objectives in that these experiences are designed both to engage learners in behaviors and/or result in behaviors or attitudes appropriate to the objectives deemed desirable for learners. The teacher engages in various auditory, visual, tactile, and olfactory stimuli to move learners into or through the desired behaviors.

There are, in reality, a basic number of ways a teacher transmits these stimuli. He may be the single source of transmission or he may utilize any number of auxiliary aids. His basic action in transmission may be either oral or non-oral. A basic list of teacher transmission actions is presented in Figure 5.

It is obvious that within a teaching-learning episode of any duration a great many, if not all, of these actions can be performed singularly or in combination by a teacher. The above actions have been identified and classified in that each of these actions can be selected as the primary action because of its appropriateness in terms of the student behavior and/or attitude desired and the dynamics of the teaching-learning activity.

Unit - Teacher Action - Question Asking

| Level | Illustrative activities |
|---|---|
| Para-teacher | 1. Observation of classroom teacher's oral and written questions. |
| Teacher | 1. Observation of classroom teacher's oral and written questions.<br>2. Identification of specific cognitive process required by questions observed in teaching-learning activity.<br>3. Classification of oral and written questions observed in a teaching-learning activity as requiring either an inductive or deductive investigational mode. |
| Master Teacher | 1. Observation of classroom teacher's oral and written questions.<br>2. Identification of specific cognitive process required by questions observed in teaching-learning activity.<br>3. Classification of oral and written questions observed in a teaching-learning activity as requiring either an inductive or deductive investigational mode.<br>4. Classification of the instructional focus in a teaching-learning activity by observing and analyzing patterns of questioning. |
| Specialist | The specialist would engage in all of the above mentioned illustrative activities. This person would not only have the greatest degree of involvement in these activities but would also have additional learning activities tailored to his unique interests and assessed competencies in this area. |

Figure 4

| Oral | Non-Oral | Auxiliary |
|---|---|---|
| telling | writing | use of mechanical aid to perform any of the actions in column one or two |
| question asking | showing (of objects) | |
| answering | illustrating (pictures) | |
| reading | performing an experiment | |
| singing | use of facial expressions only to communicate | |
| combination of above actions | use of bodily movements and gestures only to communicate | |
| | combination of above actions | |

combinations of oral → non-oral → auxiliary

Teacher Actions

Figure 5

The teaching-learning strategy has several components within it and these constituent elements predicate the specific action or combination of actions which a teacher uses. Figure 6 illustrates the number of constituents which have been identified as the basic components of a teaching strategy. When a teacher plans to set in motion a teaching-learning activity for the purposes of accomplishing one or more instructional objectives, any one or number of these components may be identified and related to determine his specific "strategy". A specific teacher action, as identified in Figure 5, may be related to any number of the constituents identified below.

It is assumed that a teaching strategy is set in motion to engage learners or produce in learners certain desired behaviors or feelings. It is also assumed that all behaviors can be classified as either cognitive, affective or psychomotor in nature. These three behavioral domains have been classified into specific levels of behavioral processes taxonomically ordered. These taxonomies are accepted as explicit types of behaviors for use in the development of educational objectives to be effected by teaching strategies.

Any behavioral process within the three domains, when explicitly stated in an instructional objective, is not itself the teaching strategy but one of the desired learner behaviors resulting from what that strategy sets in motion.

These behaviors can be set in motion and engaged in in a number of formats. First, the teacher and learners can engage in these behaviors using a number of processes which are referred to in Figure 6 as instructional constituents. These instructional constituents are general tactics which describe what the teacher and/or learners are doing to one another or to the subject under study. These tactics do not describe the degree of cognitive, affective, or psychomotor involvement but the type of behavior appropriate to the situation. Ten of the most common types of tactics have been identified. While this list may not be exhaustive, it is generally inclusive of the operational tactics teachers might use in interacting with learners and learning materials.

In addition to the planned tactics and desired behaviors, there are additional components which may receive consideration within a teaching strategy. For example, the investigational mode outline which the learners pursue may be either inductive or deductive or a combination of both. Engagement of learners in a specific mode, or in a specific tactic or both may be the objective with or without an explicit level and type of taxonomical behavior identified as corollary in an instructional objective.

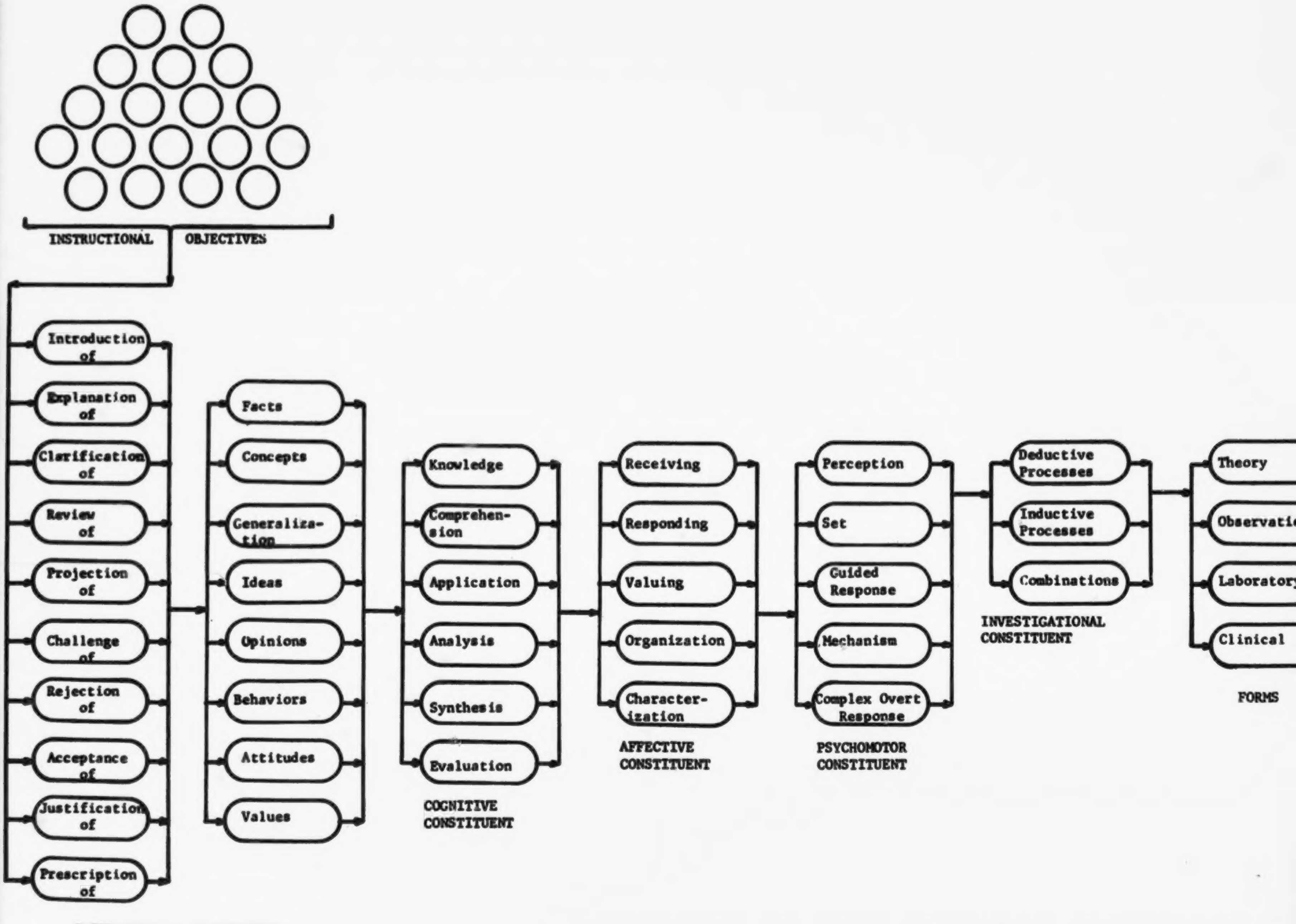
Another consideration in a teaching strategy is the several types of communication patterns which may be structured by the teacher. There are many patterns observable in teaching-learning interactions which can be planned for. The most common pattern is probably a teacher transmitting to a group of learners simultaneously. $(T \rightarrow L_{a,\ldots,n})$. Another common pattern is teacher transmitting to individual learners in sequence $(T \rightarrow L_a\ L_b\ L_c)$. A third pattern is interaction between teacher and a learner or learners $(T \rightarrow L_a$ or $T \rightarrow L_a\ L_b\ L_c)$. A number of these illustrative communication patterns are shown with the other constituents in Figure 6.

Once again, as with the other identified constituents, the communication pattern with its socio-psychological implications within the instructional setting may be the primary constituent to be facilitated by a particular teaching strategy. This strategy may or may not have explicit corollary concerns in terms of tactical involvement, investigational modes, or types and levels of behavior.

A final consideration in the teaching-strategy is the type of direction within the teaching-learning episode. Either convergency or divergency may be sought by the teacher in the thinking, feeling, and acting he engages his learners in. This is another component which must be given priority consideration in the development of the total teaching strategy.

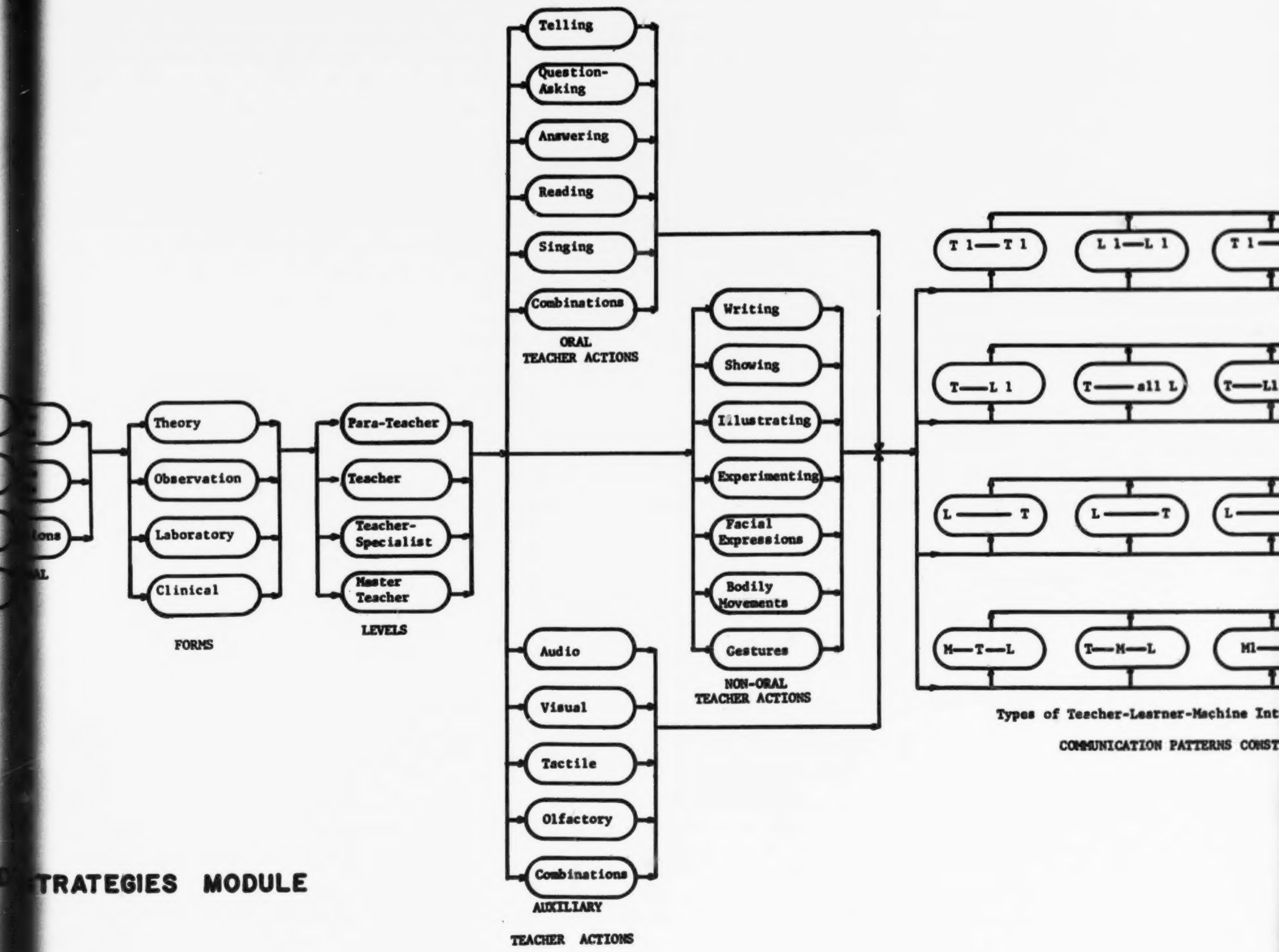
Instructional units within this module take a basic teacher action and interrelate it with any number of possible constituents or combination of constituents to effect different teaching strategies. These strategies may be set forth by the student in either a laboratory or clinical experience. An example of a possible teaching strategy which a student might implement is shown in Figure 7. The teaching strategy could consist of a review of information focusing on the knowledge level deductively through a telling action involving teacher - learner interaction in a convergent direction.

This sample teaching strategy built around an instructional objective and a basic teacher action of telling is then one learning activity that could be engaged in within a number of forms (observation, laboratory, clinical). It is one activity within one instructional unit within one

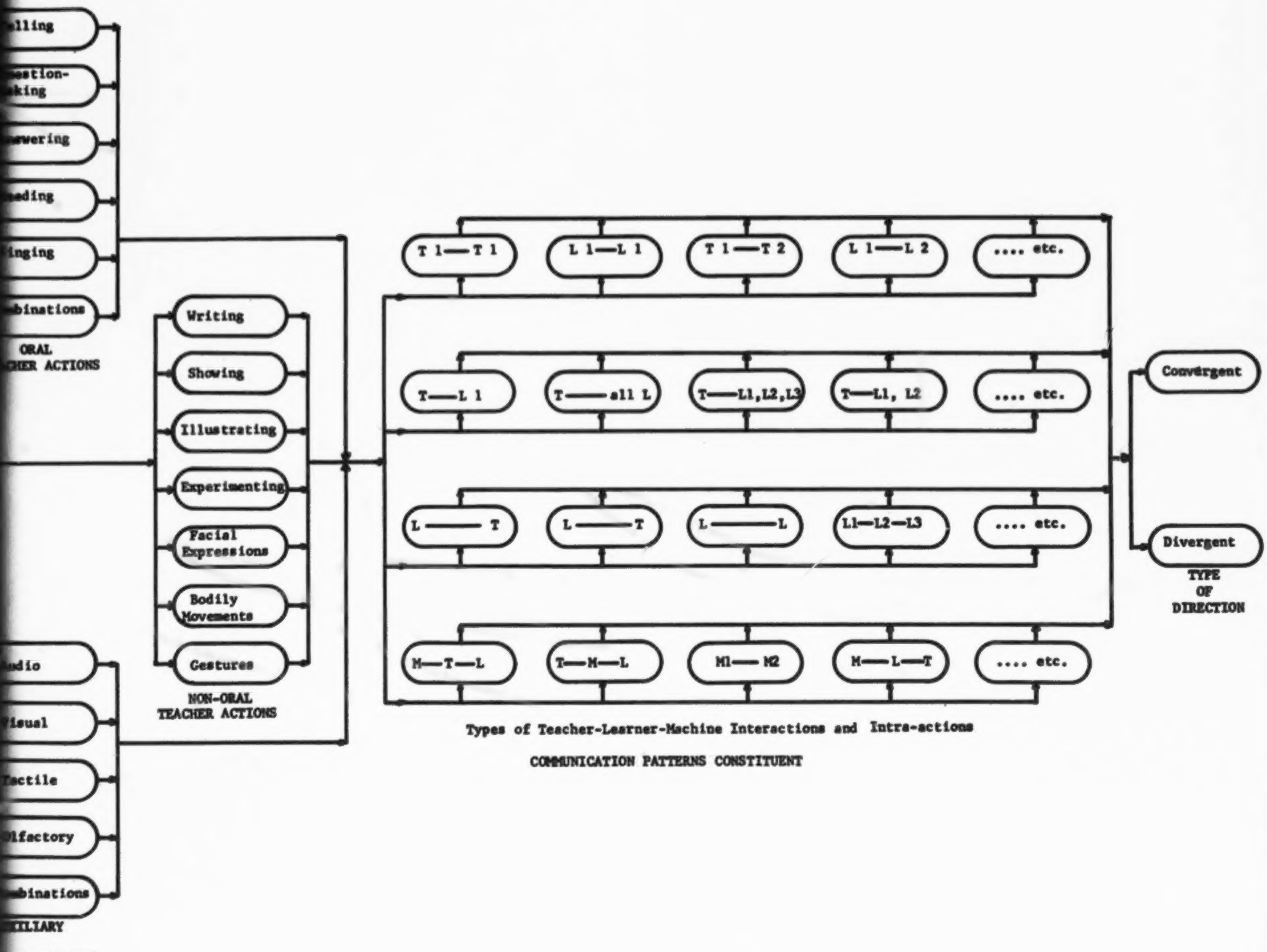

INSTRUCTIONAL OBJECTIVES
Introduction of
Explanation of
Clarification of
Review of
Projection of
Challenge of
Rejection of
Acceptance of
Justification of
Prescription of
INSTRUCTIONAL CONSTITUENT
Facts
Concepts
Generalization
Ideas
Opinions
Behaviors
Attitudes
Values
Knowledge
Comprehension
Application
Analysis
Synthesis
Evaluation
COGNITIVE CONSTITUENT
Receiving
Responding
Valuing
Organization
Characterization
AFFECTIVE CONSTITUENT
Perception
Set
Guided Response
Mechanism
Complex Overt Response
PSYCHOMOTOR CONSTITUENT
Deductive Processes
Inductive Processes
Combinations
INVESTIGATIONAL CONSTITUENT
Theory
Observati
Laborator
Clinical
FORMS

CONSTITUENTS OF THE TEACHING STRATEGIES MO

FIGURE 6


Theory
Observation
Laboratory
Clinical
FORMS
Para-Teacher
Teacher
Teacher-Specialist
Master Teacher
LEVELS
Telling
Question-Asking
Answering
Reading
Singing
Combinations
ORAL TEACHER ACTIONS
Writing
Showing
Illustrating
Experimenting
Facial Expressions
Bodily Movements
Gestures
NON-ORAL TEACHER ACTIONS
Audio
Visual
Tactile
Olfactory
Combinations
AUXILIARY TEACHER ACTIONS
T 1—T 1
L 1—L 1
T—L 1
T—all L
L—T
L—T
M—T—L
T—M—L
Types of Teacher-Learner-Machine Int
COMMUNICATION PATTERNS CONST

TRATEGIES MODULE


elling
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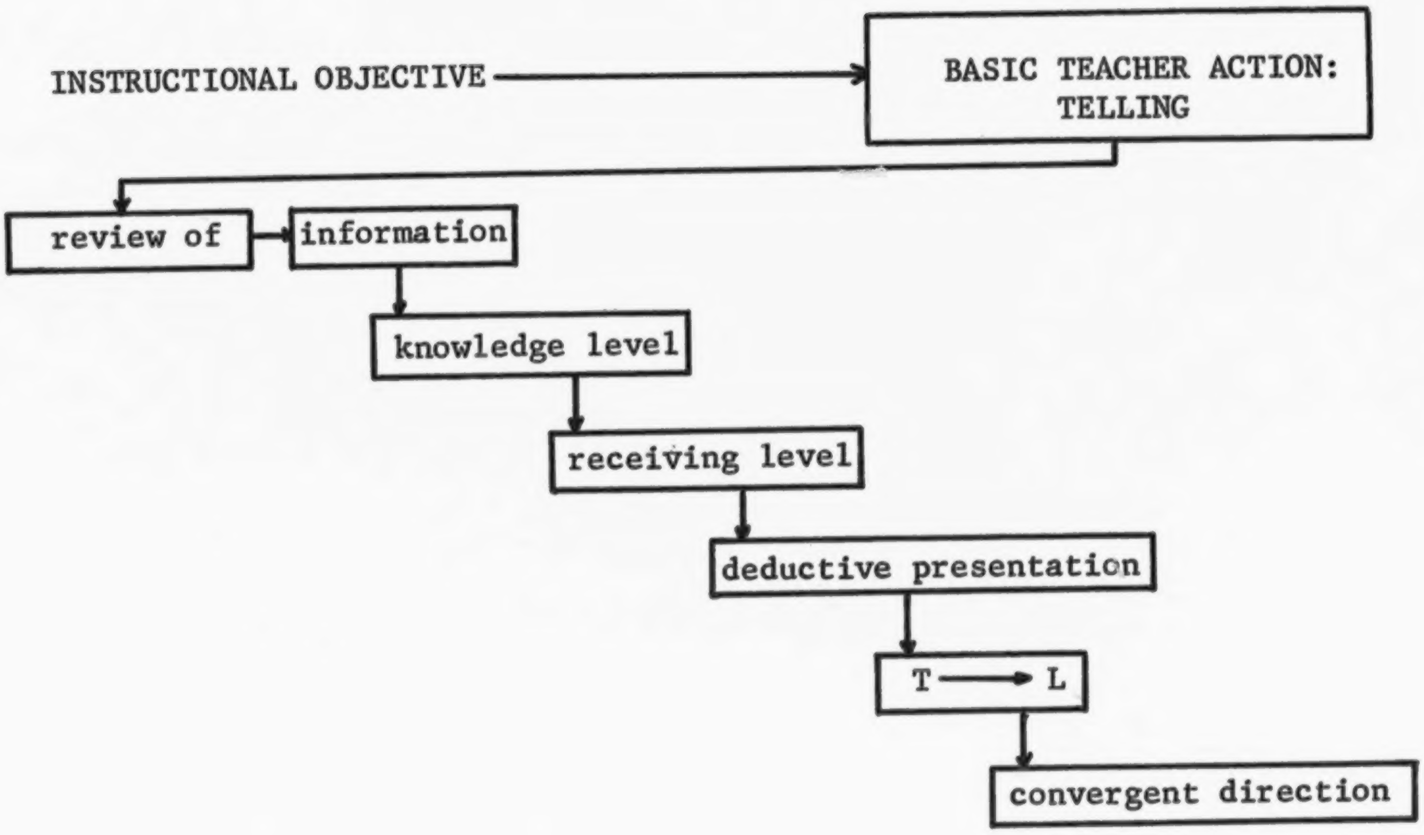
ORAL
CHER ACTIONS
Writing
Showing
Illustrating
Experimenting
Facial
Expressions
Bodily
Movements
Gestures
NON-ORAL
TEACHER ACTIONS
udio
Visual
Tactile
Olfactory
binations
XILIARY
ER ACTIONS
T 1—T 1
L 1—L 1
T 1—T 2
L 1—L 2
.... etc.
T—L 1
T—all L
T—L1,L2,L3
T—L1, L2
.... etc.
L—T
L—T
L—L
L1—L2—L3
.... etc.
M—T—L
T—M—L
M1—M2
M—L—T
.... etc.
Types of Teacher-Learner-Machine Interactions and Intra-actions
COMMUNICATION PATTERNS CONSTITUENT
Convergent
Divergent
TYPE
OF
DIRECTION


INSTRUCTIONAL OBJECTIVE
BASIC TEACHER ACTION: TELLING
review of
information
knowledge level
receiving level
deductive presentation
T → L
convergent direction

Sample Teaching Strategy
Figure 7

module of one of the four subelements of the Clinical and Instruction Element.

This illustration provides the final example to complete the picture of what is involved in the Curriculum and Instruction Element. Beginning with the systematic breakdown into four basic subelements and ending with this example of a learning activity, the content and structure of curriculum and instruction have been outlined and the teacher education process has been charted.

# ART EDUCATION

Ronald W. Neperud

# ART EDUCATION

Abstract. The structure and content of Elementary Teacher Education in Art in the years to come will be substantially affected by our vision of Art itself in the curriculum of the elementary school, and by the role we foresee for the teacher of Art. Accordingly the WETEP concept emphasizes instructional roles which will facilitate individualized studies and explorations. Individual programs will be designed to fit each prospective teacher's rate of progress and levels of competency. All student programs will include some minimal competencies in Art. Some programs will reflect in-depth competencies for those who choose Art as a specialty area in their teacher preparation.

The Minimal Competencies make up the first of four subelements in this Element. All elementary teachers should attain some sophistication in the visual arts and an interest and curiosity to seek further understanding and knowledge in this area. All prospective teachers should gain some awareness of the historical, social, and psychological foundations of Art. All should be aware of the visual aspects of our culture, the place and function of design. Since the effectiveness of the teacher in matters of the visual arts is largely determined by the sensitivity of his visual powers, he should be able to see in a discriminating and visually elaborated manner.

For those electing Art as a special interest, the foundation or base for the critical selection and appraisal of all Art learning situations is provided in the Understanding of Art subelement. The next subelement, Making Art, provides the knowledge of materials, processes, tools, equipment, and procedures necessary to develop appropriate learning activities for pupils in the elementary school. And the last of the subelements, Teaching Art, stresses the teacher's ability to structure the psychological and physical dimensions of learning experiences in this field.

Art shares with other areas of the curriculum several dimensions, the recognition of which provides a unifying factor in elementary education. For example, Art shares with Mathematics the perception of certain spatial relationships and the content of the Social Studies can provide the subject matter for Art. As the WETEP system is implemented, teachers' roles in all areas will expand to those of supervision, guidance, and evaluation of individualized student work in studios or in self-study learning centers.

# ART EDUCATION

Our vision of art in the elementary curricula several years hence and the anticipated role of the art teacher will substantially affect the structure and content of elementary teacher education in art.

## Art in the Elementary School

Art, as a part of the future elementary school, has both unique and shared dimensions. Only in visual areas instruction is a concerted effort made to provide for aesthetic education in the visual realm. Through participatory activities in viewing and creating art both the intellectual and affective modes of learning and responses are emphasized.

Art shares with other areas of the curriculum several dimensions the recognition of which provides a unifying factor in elementary education. These can be amplified and re-emphasized by all elementary teachers regardless of specialties. For instance, art shares with mathematics the perception of certain spatial relationships. Along with drama, dance, creative writing, and productive elements of music, art provides opportunities for personal divergent modes of thinking and production. The content of the social studies can provide the subject matter for art. Art as a part of the elementary school curriculum for all students can heighten and add to the awareness of these shared dimensions.

## Instructional Roles

While the art specialist or art teacher is primarily responsible for elementary visual arts education, the recognition of the shared dimensions implies instructional responsibilities for all elementary teachers. The values which they express explicitly or imply subtly should complement and reinforce the unique dimensions of art. More specifically, it would be expected that instructor's statements and the visual environment would not be prejudicial to a very limited and narrow view of art. Likewise, teachers should recognize and appropriately value student art work on its own merits. Teachers can also provide a strong experiential base for both interpreting and creating art by utilizing a multi-sensory approach to learning and by encouraging student sensitivity and response to their views and feelings. This can provide an atmosphere nourishing all of the arts. The creation of a school climate favorable to arts education is, at least, a step in improving the societal conditions, a problem in sustaining art education.

The elementary art teacher or specialist of the immediate future will fulfill a role which is changing and expanding. Many of the current responsibilities remain, but greater emphasis on individualized studies and explorations will change instructional roles. Art teachers will necessarily prepare students for independent study and investigation through design instruction, the exploration of ideas, the introduction to art history and appreciative studies, and other concerns designed to provide background and direction to individual studies. Additional roles will include the supervision, guidance, and evaluation of individualized student work in studio and in self-study centers.

## Art in the Education of the Elementary Teacher

A major problem in teacher preparation courses in art education has been that of dealing effectively with the wide variability of prospective teachers' visual literacy. The opportunity to fit a program to each student's natural rate of progress, as in the future elementary school, would be desirable. This program would include both minimal competencies required of all teachers and the in-depth competencies of art as a specialized study area.

All classroom teachers should attain a sophistication in the visual arts and an interest and curiosity to seek further understanding and knowledge in this area. Since the effectiveness of the teacher in matters of the visual arts is largely determined by the sensitivity of his visual powers he should be able to see in a discriminating and visually elaborated manner. He should be able to both extend and value the unique and shared dimensions of art. Minimal competencies in the visual arts for all teachers are included in Table I.

TABLE I

MINIMAL VISUAL ARTS COMPETENCIES FOR ALL ELEMENTARY TEACHERS

1. An awareness of the historical, social, and psychological foundations of art.

2. An awareness of the visual aspects of our culture--the place and function of design.

3. An acquaintance with some of the media, processes, and techniques employed in the visual arts.

4. An understanding of the aesthetic experience as both a creator and viewer of art.

5. An understanding of students' growth and developmental patterns in the visual arts.

6. An understanding of educational theories and practices in teaching art.

## Art as a Specialized Study in Elementary Teacher Education

Several of the competencies of art as a specialized study are common to and an extension of the Minimal Competencies. The Understanding of Art gained through both interpretive and productive activities provides the foundation or base for the critical selection and appraisal of all art learning situations. Making Art, in addition to promoting an understanding of art, provides the knowledge of materials, processes, tools, equipment and procedures necessary to developing appropriate learning activities for students in the elementary school. The appropriateness of learning can be best judged by understanding the growth and development of children, one of the competencies of Teaching Art. Ability to structure the psychological and physical dimensions of learning experiences are also essential to teaching Art. In addition, those competencies preparatory to the teaching of art are included. These specialty competencies are outlined in Table II.

### TABLE II

### SPECIALTY COMPETENCIES - ART
(Applicable to students electing art as the special interest area)

#### Understanding Art

1. Knowledge of art movements--historical, social and psychological foundations.

2. Responding to works of art and understanding the aesthetic experience as a viewer of art.

3. Ability to exercise discriminative and critical judgments.

4. Sensitive understanding of the principles and elements of design as they function in the visual aspects of our culture.

#### Making Art

1. Skills and technical competence in various media, processes and techniques employed in the visual arts.

2. Competence in developing a personally expressive imagery in at least one medium.

3. Knowledge of the aesthetic experience and the creative process as a producer of art.

4. Ability to evaluate one's own and others work in terms of aesthetic qualities and criteria.

Teaching Art

1. Understanding of children's and youth's developmental and growth patterns in the visual arts.
2. Understanding of the learning processes in the visual arts.
3. Understanding of educational theories and practices in teaching art.
4. Ability to communicate enthusiastically and dramatically with students employing both visual and verbal means.
5. Competence in selecting and organizing learning experiences in art--individual activities and long-range curriculum plans.
6. Competence in organizing and maintaining the physical environment--supplies, equipment, student work, visual and other resources.
7. Competence in budgeting, ordering, selection and procurement of supplies, equipment, visual resources.

As the Model of Art Education Element flow chart indicates, the behavioral objectives associated with the Minimal Competencies subelement, required of all elementary teachers, are of like equivalency without required sequence or prerequisites. Students who are assessed as possessing the Minimal Competencies at decision point AR 20 may advance to the appropriate module of the Specialty subelements through decision point AR 30.

In the Specialty Competencies, the equivalent subelements of Understanding Art and Making Art Precede the Teaching Art subelement.

Within the Understanding Art subelement the historical module is independent while all of the other modules exist in a sequential relationship.

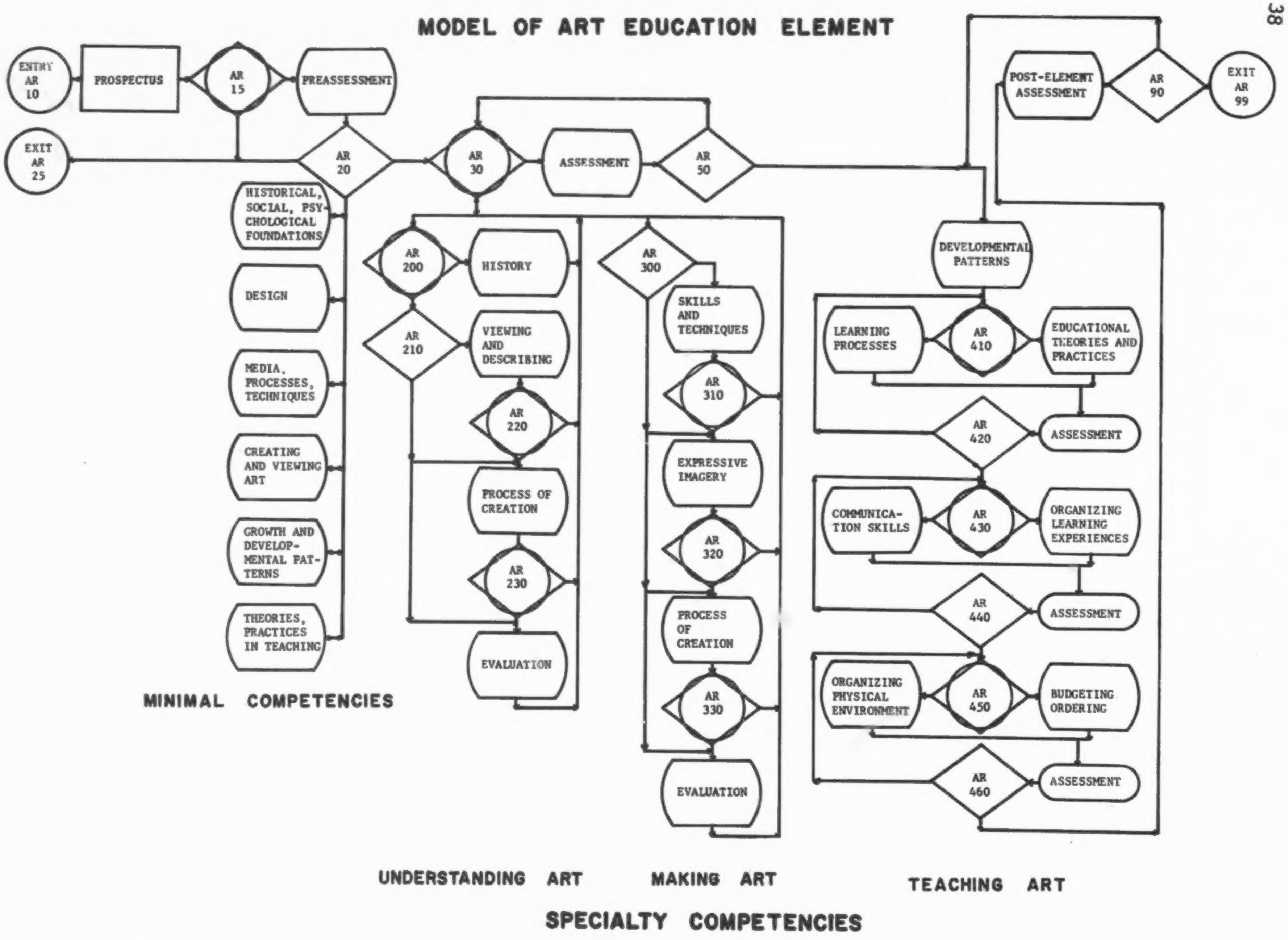
All modules of Making Art exist in a sequential relationship.

In Teaching Art, the Understanding of developmental patterns in art precedes all other modules; the equivalent modules of understanding learning processes in art and theories and practices in teaching art follow; communicative skills and selecting and organizing learning experiences which are equivalent come next; the equivalent modules of organizing the physical environment and budgeting and ordering are last. It is anticipated that the modules of developmental patterns, communicative skills, and the organization of learning experiences will consist of sub-modules, Early Childhood, Middle Elementary, and Upper

Elementary, offering alternate paths of development dependent upon desired specialization.

An assessment operation would be used to determine achievement of desired competencies in the program.

# MODEL OF ART EDUCATION ELEMENT


ENTRY AR 10
PROSPECTUS
AR 15
PREASSESSMENT
EXIT AR 25
AR 20
AR 30
ASSESSMENT
AR 50
POST-ELEMENT ASSESSMENT
AR 90
EXIT AR 99
HISTORICAL, SOCIAL, PSYCHOLOGICAL FOUNDATIONS
DESIGN
MEDIA, PROCESSES, TECHNIQUES
CREATING AND VIEWING ART
GROWTH AND DEVELOPMENTAL PATTERNS
THEORIES, PRACTICES IN TEACHING
MINIMAL COMPETENCIES
AR 200
HISTORY
AR 210
VIEWING AND DESCRIBING
AR 220
PROCESS OF CREATION
AR 230
EVALUATION
AR 300
SKILLS AND TECHNIQUES
AR 310
EXPRESSIVE IMAGERY
AR 320
PROCESS OF CREATION
AR 330
EVALUATION
DEVELOPMENTAL PATTERNS
LEARNING PROCESSES
AR 410
EDUCATIONAL THEORIES AND PRACTICES
AR 420
ASSESSMENT
COMMUNICATION SKILLS
AR 430
ORGANIZING LEARNING EXPERIENCES
AR 440
ASSESSMENT
ORGANIZING PHYSICAL ENVIRONMENT
AR 450
BUDGETING ORDERING
AR 460
ASSESSMENT
UNDERSTANDING ART
MAKING ART
TEACHING ART
SPECIALTY COMPETENCIES

# HEALTH EDUCATION

Warren H. Southworth, Chairman

Paul A. Knipping

## HEALTH EDUCATION

Abstract. In the course of the Health Education Element, the WETEP student will come to know the critical need for individual health instruction and guidance, for pupils and parents. He will learn to apply the program which best meets the needs of various socially stratified pupil groups in their attainment of desirable health understandings and behaviors. He will learn to combine relevant data to facilitate a strategy of environmental improvement. He will learn to schedule resource personnel from community agencies, and acquire and put to use appropriate health teaching materials.

The caliber of school health services, Health Education programs, and healthful environments presently available to people are too often not addressed to on-going needs. The WETEP Health Education Element has evolved in response to these human needs.

WETEP assumes that health is one of the most important factors conditioning success in all undertakings, personal and social, and that for this reason, schools must properly place great emphasis on the improvement of health behaviors as an outcome of education. The ability of youngsters to cope with stress, societal demands, and the mores of the establishment is formulated in their very early school experiences. Accordingly, WETEP's Health Education Element has been designed to prepare elementary teachers who can appreciate, analyze, and apply in their teaching a thorough knowledge and understanding of health needs and services.

The Health Education Element, like other instructional elements in WETEP, is built upon a base of defined educational objectives. Particularly stressed in this element are:

- the relationship of good physical and mental health to academic achievement and the impact of poor health on students' performance

- principles of plausible health education procedures for helping to alleviate personal, family, and community health problems

- academic climates designed to motivate desirable human responses to health education

- the variations in human ecological factors which necessitate the preparation of a variety of health teaching programs.

In short, the WETEP teacher, through his understanding and promotion of physical and mental health, helps pupils take full advantage of educational opportunities which have been made available to them.

## HEALTH EDUCATION

### School Responsibility for Health

The WETEP Health Education Element is designed to support and strengthen the health education purposes and objectives in the schools. School health efforts must be consistent with the purposes of schools and with educational objectives. Furthermore, the activities implied by WETEP which support school health programs are to be coordinated with the health efforts of home and community.

### Goals of Education

School interest in pupil health has changed over the years, partly because of greater recognition of health as an important ingredient of successful living and partly because of changing concepts of education. Schools have become increasingly concerned with the full lives of boys and girls and with the environment in which they live, grow, play and learn.

Groups of teachers have been particularly active in stating the aims of education in terms of behavioral outcomes. One of the most influential of the early statements is the 1918 report by the Commission on the Reorganization of Secondary Education appointed by the National Education Association.[1] The report stipulates health as one of seven cardinal principles or outcomes of education. The complete list includes: (a) health; (b) command of fundamental processes; (c) worthy home membership; (d) vocation; (e) citizenship; (f) worthy use of leisure time; and (g) ethical character. In this pioneer statement health is given a distinct place among the major concerns of education.

The Educational Policies Commission, in its classic statement of 1938, The Purposes of Education in American Democracy, describes desired pupil outcomes in each of four groups of educational objectives: (a) self-realization; (b) human relationships; (c) economic efficiency; and (d) civic responsibility.[2] In discussing education for self-realization, the Commission says, that the health-educated person is characterized as follows:

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[1] U. S. Department of the Interior, Bureau of Education. Cardinal Principles of Secondary Education. Bulletin 1918, No. 35. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1918. p. 32.

[2] National Education Association and American Association of School Administrators, Educational Policies Commission. The Purposes of Education in American Democracy. Washington, D. C.: The Commission, 1938. p. 157.

1. The educated person understands the basic facts concerning health and disease. Health is a factor which conditions our success in all our undertakings, personal and social. For that reason schools properly place a great emphasis on health as an outcome of education.

2. The educated person protects his own health and that of his dependents. Knowing what is necessary for maintaining health in body and mind, the educated person so conducts his life as to respect these great rules of the game. He tries to secure competent medical advice and treatment for himself and his family, with special attention to the early discovery and treatment of remediable defects and a systematic plan of health inventory and illness prevention.

More recently, the Educational Policies Commission in An Essay on Quality in Public Education states that the elementary curriculum among other things, ". . . teaches the essentials of safety and personal health and promotes physical co-ordination and skill."[3] It continues, "The programs of all secondary-school students should include English, social studies, science, mathematics, and fine arts, as well as physical and health education."

Another statement about the objectives of schools is found in A Design for General Education, prepared by the American Council on Education.[4] In this report, the health objective, first in the list, is expressed as follows: "In the committee's judgement, general education should lead the student: To improve and maintain his own health and take his share of responsibility for protecting the health of others."

In 1955, a White House Conference on Education was held in Washington. It was attended by representatives of many walks of life, including education and medicine, from all of the states and territories. In answer to the question "What should our schools accomplish?" the Conference Report states that schools should continue to help each pupil develop:

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[3] National Education Association and American Association of School Administrators, Educational Policies Commission. An Essay on Quality in Public Education. Washington, D. C.: the Commission, 1959. p. 31.

[4] American Council on Education. A Design for General Education. (Edited by T. R. McConnell.) Washington, D.C.: the Council, 1944. p. 186.

1. The fundamental skills of communication--reading, writing, spelling, as well as other elements of effective oral and written expression; the arithmetical and mathematical skills, including problem solving.
2. Appreciation for our democratic heritage.
3. Understanding of civic rights and responsibilities and knowledge of American institutions.
4. Respect and appreciation for human values and for the beliefs of others.
5. Ability to think and evaluate constructively and creatively.
6. Effective work habits and self-discipline.
7. Social competence as a contributing member of his family and community.
8. Ethical behavior based on a sense of moral and spiritual values.
9. Intellectual curiosity and eagerness for life-long learning.
10. Esthetic appreciation and self-expression in the arts.
11. Physical and mental health.
12. Wise use of time, including constructive leisure pursuits.
13. Understanding of the physical world and man's relation to it as represented through basic knowledge of the sciences.
14. An awareness of our relationships with the world community.[5]

All these reports include health as a desired outcome of education. All have significant bearing on educational philosophy and on health education. They present realistic attainable goals. Using them as guides, local school systems and individual schools may formulate statements of their specific purposes, preferably following discussion by all school personnel and representatives of the community. In turn, each teacher needs to have clearly in mind his objectives in teaching and their relevance to the total school program. The latter includes health among its objectives.

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[5] The Committee for the White House Conference on Education. A Report to the President. Washington, D.C.: Superintendent of Documents, Government Printing Office, 1956. p. 126.

In a subsequent statement from the Education Policies Commission (1961) entitled, The Central Purpose of American Education it states that, "the purpose which runs through and strengthens all other educational purposes. . .the common thread of education. . .is the development of the ability to think. This is the central purpose to which the school must be oriented if it is to accomplish either its traditional tasks or those newly accentuated by recent changes in the world. To say that it is central is not to say that it is the sole purpose, or in all circumstances the most important purpose, but that it must be a pervasive concern in the work of the school. Many agencies contribute to achieving educational objectives, but this particular objective will not be generally attained unless the school focuses on it. In this context, therefore, the development of every student's rational powers must be recognized as centrally important."[6] The article further states, under "Prerequisites of Rationality", ". . .the school must be guided in pursuing its central purpose or any other purposes, by certain conditions which are known to be basic to significant mental development. The school has responsibility to establish and maintain these conditions. One of them is physical health. The sick or poorly nourished pupil, the pupil suffering from poor hearing or vision, is hampered in learning. An adequate physical basis for intellectual life must be assured.

Mental health is also of profound importance. With it, the pupil can have the desire and respect for learning which promote the satisfactory development of his capacity for effective mental performance. Without it, the likelihood of such development is drastically reduced, if not rendered impossible. The pupil who is in rebellion against authority who feels inadequate, insecure, or unduly apprehensive is hampered in his learning, and he frequently hampers the learning of others. As the child is helped to view himself and the society in a healthy way, to develop self-discipline and to feel secure in his relationships, he becomes better able to respond positively to the school."[7]

In addition to the preceding philosophical base for having school health, certain economic reasons require the inclusion of health activities in the school curriculum. Ample evidence exists to support the claim that if a child is not healthy, he may be unable to take full advantage of the educational opportunities which are being made available to him at public expense. The cost per pupil, per year of education in the average urban school is in the neighborhood of $500 and if because of some health problem. . .poor vision, or poor hearing. . .a pupil fails to achieve and becomes a repeater or a drop-out, it becomes an additional financial loss to the community. Here is good reason for attention to the health of pupils; for detecting the health problems they have and for getting something done about them.

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[6] Educational Policies Commission, The Central Purpose of American Education, National Education Association of the United States, Washington, D.C. p. 12.

[7] Ibid. p. 15.

The legal basis for having a school health program may be found in state laws and regulations; i.e. both permissive and mandatory specifications, which direct and authorize schools to do certain things about health. For example:

The school board _may_ furnish lunches;

The school board _may_ employ public health nurses and licensed dentists;

The district board _shall_ require health examinations of all employees;

The school board _may_ require periodic health examinations of school children. . .and pay the costs of such examinations;

Physiology and Hygiene _shall_ be taught;

Each school _shall_ provide instruction about dairy products;

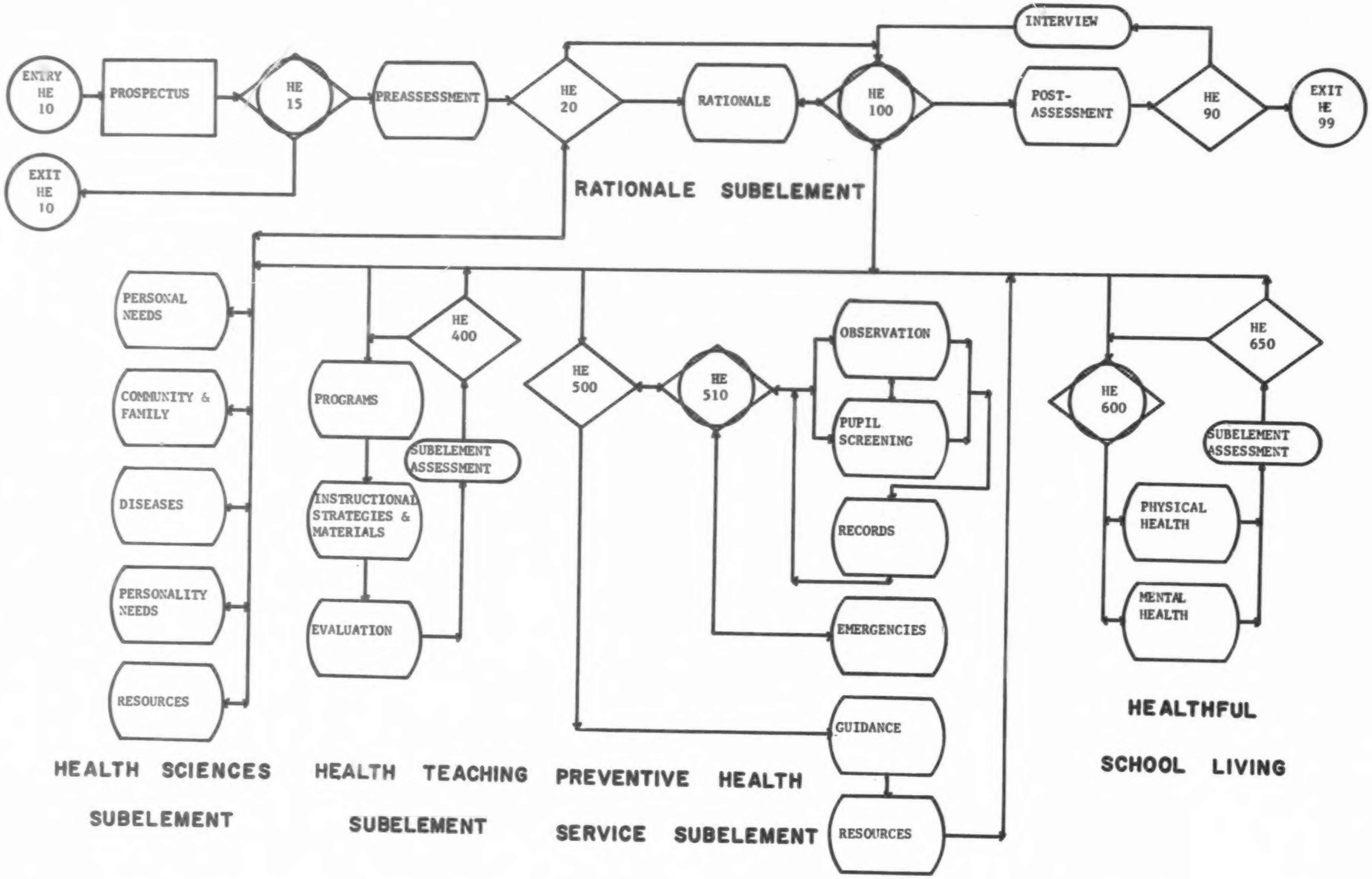
Every employer _shall_ furnish employment and a place of employment which is safe for employees and frequenters.

Compulsory attendance law places the school "in loco parentis".

The Health Education Element of WETEP evolved in response to a human need. The calibre of Health Education programs, school health services and healthful environs available to populations (especially in less affluent societies) constituted an ongoing national disaster. The void has become apparent to us by every classic index, i.e. the news media daily relate data concerning total morbidity and mortality, the incidence of suicide, maternal and infant mortality, the ascending dependency by young persons on alcohol, drugs, tobacco and the accompanying rise in VD rates. Without a doubt, the ability of youngsters to cope with stress, societal demands, and the mores of the establishment are formulated in their very early school experiences, so it becomes mandatory that health guidance be provided by skilled, dedicated teachers.

The Health Education Element is organized around five subelements: 1) Rationale, 2) Health Science, 3) Health Teaching, 4) Preventive Health Services, and 5) Healthful School Living. These subelements in turn are organized into appropriate modules which provide instructional experiences in health education. These modules are represented on the flow chart for the Model of the Health Education Element.

## MODEL OF HEALTH EDUCATION ELEMENT


ENTRY HE 10
PROSPECTUS
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EXIT HE 10
PREASSESSMENT
HE 20
RATIONALE
HE 100
INTERVIEW
POST-ASSESSMENT
HE 90
EXIT HE 99
RATIONALE SUBELEMENT
PERSONAL NEEDS
COMMUNITY & FAMILY
DISEASES
PERSONALITY NEEDS
RESOURCES
HEALTH SCIENCES SUBELEMENT
HE 400
PROGRAMS
SUBELEMENT ASSESSMENT
INSTRUCTIONAL STRATEGIES & MATERIALS
EVALUATION
HEALTH TEACHING SUBELEMENT
HE 500
HE 510
OBSERVATION
PUPIL SCREENING
RECORDS
EMERGENCIES
GUIDANCE
RESOURCES
PREVENTIVE HEALTH SERVICE SUBELEMENT
HE 650
HE 600
SUBELEMENT ASSESSMENT
PHYSICAL HEALTH
MENTAL HEALTH
HEALTHFUL SCHOOL LIVING

| | |
|---|---|
| Subelement 1:<br>RATIONALE FOR INCLUSION OF HEALTH EDUCATION IN ELEMENTARY CURRICULUM | Modules:<br>Personal, community, and national reasons for including Health Education in K-6 curriculum. |
| Subelement 2:<br>HEALTH SCIENCE OBJECTIVES (General) | Personal Health Problems and Needs<br>Community and Family Health Needs<br>The Nature of Occupational, Degenerative and Infectious Diseases<br>Emotional and Personality Needs, Including Sex Information for Teachers<br>Personal and Community Health Resources |
| Subelement 3:<br>HEALTH TEACHING | Programs<br>Instructional Strategies and Materials<br>Evaluation |
| Subelement 4:<br>PREVENTIVE HEALTH SERVICES | Observation<br>Pupil Screening<br>Health Records<br>Emergencies<br>Health Guidance<br>Health Specialists and Resources |
| Subelement 5:<br>HEALTHFUL SCHOOL LIVING | Physical Health<br>Mental Health |

9

## SUBELEMENT 1: RATIONALE

### Module 1: Rationale for personal, community and national curriculum

(a) Knowledge

1.101 Knows the philosophical basis for including Health Education in a total school program.

1.102 Knows the cost of ill health as it relates to the education of children.

1.103 Knows the legal basis for the school's part in helping to fulfill the health needs of children.

1.104 Knows the Health Education implications of "in loco parentis".

1.105 Knows the importance of Health Education in the solving of personal, family and community health problems.

1.106 Knows the relationships of good physical and mental health to academic achievement.

1.107 Knows that school Health Education includes teaching, services, and the healthful school environment.

(b) Comprehension

1.201 Understands the philosophical basis for including Health Education in a total school program.

1.202 Understands the economic aspects of poor health and its impact on the education of children.

1.203 Understands the state statuatory requirements as they determine the role of the school in fulfilling the health needs of children.

1.204 Understands the sharing of responsibility under the aegis of "in loco parentis".

1.205 Understands the value of Health Education in resolving personal, family and community health problems.

1.206 Understands the interrelatedness of good physical and mental health to classroom performance.

1.207 Understands the supportive role of health teaching, Health services, and a healthful school environment in providing a proper School Health Education.

(c) Application

1.301 Can present a rationale, including the philosophical basis, for the inclusion of Health Education in the total school program.

1.302 Can present statistical, or tabulated evidence revealing the influence of ill health among school children on the cost of public education.

1.303 Can apply appropriate aspects of the state laws regarding the organization and operation of the school health program.

1.304 Can assume the role of responsible agent for children under the aegis of "in loco parentis".

1.305 Can present plausible Health Education procedures for helping to alleviate personal, family and community health problems.

1.306 Can present evidence to support the claim that good physical and mental health influence classroom pupil performance.

1.307 Can present the rationale for insisting on standards of excellence regarding health teaching, services, and a healthful environment in the school.

(d) Analysis

1.401 Can analyze a number of philosophical contentions which support the idea of including Health Education in the school program.

1.402 Can analyze cost data regarding the financial loss due to ill health among school children.

1.403 Can interpret facets of state legal regulations which influence the organization and operation of the school health program.

1.404 Can analyze and support the responsibilities of teachers "in loco parentis".

1.405 Can analyze the application of Health Education procedures to school health problems concerning individuals, families and the community itself.

1.406 Can analyze the academic performance of individuals experiencing a disequilibrium in either physical or mental health, and with the aid of professional health personnel arrive at some conclusions regarding the interdependency of each.

1.407 Can analyze the quality of the school health program in cooperation with professional health personnel.

(e) Synthesis

1.501 Can articulate aspects of theories into a sound declaration which supports the inclusion of Health Education in schools.

1.502 Can combine financial data from various sources to present cogent reasons for safeguarding pupil health.

1.503 Can integrate various statuatory considerations into convincing argument for inclusion of Health Education in the total school curriculum.

1.504 Can assimilate the various classroom responsibilities assumed by teachers "in loco parentis".

1.505 Can articulate health education plans for helping to meet individual, family and community health needs.

1.506 Can combine consideration of physical and mental well being in planning ways to improve pupil academic performance.

1.507 Can merge appropriate facets of the school health program to better serve the health needs of individuals, families, and the community.

(f) Evaluation

1.601 Can appraise philosophical positions taken by various groups and utilize those lending strong support to the adoption of a school health program.

1.602 Can evaluate the validity of financial data as it relates to the ill health of pupils.

1.603 Can appraise the appropriateness of the school health program as it relates to state statuatory requirements.

1.604 Can objectively appraise the effectiveness of teachers as they assume responsibilities for serving "in loco parentis".

1.605 Can reach conclusions (with proper professional advice) regarding the appropriateness and quality of Health Education as it is directed to individuals, families and communities.

1.606 Can objectively judge the academic performance of individuals experiencing a disequilibrium in mental and physical health in consultation with professional health personnel.

1.607 Can objectively appraise (in cooperation with professional health personnel) the school health program as it influences the individual, his family and the community.

SUBELEMENT 2: HEALTH SCIENCE

Module 2: Health problems and needs

(a) Knowledge

2.101 Knows the nature and prevalence of common personal health problems and needs.

2.102 Knows community health conditions, including the extent and scope of family health needs.

2.103 Knows the impact of occupational, degenerative, and infectious diseases on inhabitants of the local community.

2.104 Knows childhood growth and development patterns, including physical, mental, emotional and social aspects.

2.105 Knows the relevance of "motivation' in influencing health attitudes and behaviors of individuals and groups.

(b) Comprehension

2.201 Understands the etiology, incidence and preventive aspects of some common health problems.

2.202 Understands the human and ecological factors which affect the health of families and communities.

2.203 Understands the debilitating effects resulting from occupational degenerative, infectious and other chronic conditions.

2.204 Understands what constitutes a healthy rate of physical and mental growth and recognizes tendencies toward deviation.

2.205 Understands the critical need for motivation in influencing health attitudes and behavior of individuals.

(c) Application

2.301 Can follow plans suggested by professional health personnel to alleviate suffering on the part of certain pupils who experience health dysfunctions.

2.302 Can relate human and ecological factors, i.e. social, and financial status, job security, educational limits etc. to pupil academic performance.

2.303 Can cooperate with professional health personnel, in extending to individuals who experience debilitation the appropriate remedial and palliative actions.

2.304 Can encourage pupils to accept their genetic endowment, i.e. to improve where possible, their mental and physical development or to adjust to whatever level of attainment their heredity seems to have set.

2.305 Can plan an academic climate for motivating desirable human responses to health education.

(d) Analysis

2.401 Can selectively analyze plans formulated by professional health personnel to aid in the recovery and rehabilitation of pupils experiencing certain health problems.

2.402 Can identify and analyze those ecological health factors influencing pupils in a negative fashion.

2.403 Can analyze with aid from professional health personnel, those incapacitating conditions causing physical or emotional impairment among school children.

2.404 Can analyze those physical and mental developmental growth rates indicative of a state of well being, or disorder, in school children.

2.405 Can conceive of the essential classroom accouterments to assure a favorable physical and emotional learning site for pupils.

(e) Synthesis

2.501 Can combine the knowledge derived from professional health personnel and other relevant media in a concerted and professionally directed assault (via Health

Education) on personal health problems in the community.

2.502 Can direct (or influence) the efforts of community health agencies to implement a concerted health education "attack" on personal, family and community health problems.

2.503 Can cooperate with professional health personnel in designing a sustained Health Education program to alleviate insofar as is possible, the disabling and traumatic effects of chronic illness on school youngsters.

2.504 Can integrate appropriate aspects of various health education programs designed for school children afflicted with genetic or metabolic disorders and is capable of initiating a Health Education program tailored to meet the health needs of disadvantaged individuals at any particular learning site.

2.505 Can articulate appropriate catalytic schemes from a "pool" of motivational strategies, to elicit pupil participation and response from various socially stratified groups in a community.

(f) Evaluation

2.601 Can apply Health Education testing instruments of special design to assess the incidence of partial or complete recovery among pupils experiencing physical or emotional distress.

2.602 Can appraise the extent to which certain environmental factors impinge unfavorably upon the well being of pupils.

2.603 Can objectively appraise the rehabilitative value of the existing Health Education program to dysfunctional pupils.

2.604 Can appraise the outcome of Health Education programs designed to assist pupils in adopting certain attitudinal and behavioral changes, in response to their own physical or emotional disablement.

2.605 Can assess the degree of motivational force generated in today's academic exposure to Health Education.

## SUBELEMENT 3: HEALTH TEACHING

### Module 3: Programs

(a) Knowledge

3.101 Knows the scope and sequence of a total health teaching program in K-12.

3.102 Knows some proposed and planned programs in health teaching under production in this and other countries.

3.103 Knows the essential concepts in a health teaching program.

3.104 Knows the basic behavioral objectives in health teaching programs.

(b) Comprehension

3.201 Understands the attainable limits and the articulation of learning experiences in a total school health teaching program.

3.202 Understands the variations in human ecological factors which necessitate the preparation of a variety of health teaching programs.

3.203 Understands the conceptualization of the Health Education Element in a total school curriculum.

3.204 Understands the necessity for attainment of certain behavioral objectives in health teaching.

(c) Application

3.301 Can plan or follow a scope and sequence in health teaching suitable for different groupings of pupils.

3.302 Can implement for learners, the appropriate program of Health Education for classroom experiences.

3.303 Can logically order appropriate concepts in health teaching to various pupil groups.

3.304 Can apply the health teaching program which best meets the needs of various socially stratified pupil groups in their attainment of desirable behavioral objectives.

(d) Analysis

3.401 Can analyze each health teaching experience in terms of its group suitability, learning continuity and predictable relevance.

3.402 Can analyze the opportunities for teaching health through correlated instruction in the school subjects.

3.403 Can analyze facets and correlates of each major concept in a variety of health teaching programs.

3.404 Can selectively analyze a variety of health teaching programs to identify the most appropriate learning experiences for each differing pupil group.

(e) Synthesis

3.501 Can order and articulate instructional units from a variety of health teaching programs to meet the needs of socially and culturally diverse pupil groups.

3.502 Can combine desirable features from existing health teaching programs and envision a desirable revision strategy for future implementation.

3.503 Can integrate the content comprising each major concept in Health Education into a teaching program that will interest the pupil and lend continuity to his health learning experience throughout the formative years.

3.504 Can integrate the content comprising each major concept in Health Education into a teaching program that will motivate the pupil in the formation of desirable health habits and behavioral responses.

(f) Evaluation

3.601 Can appraise the scope and sequence of various health teaching programs.

3.602 Can assess the quality of health teaching programs.

3.603 Can evaluate the appropriateness of concepts in health teaching programs as they relate to future citizen needs.

3.604 Can objectively appraise the incidence of desirable behavioral responses through observations of pupils in the classroom.

Module 4: Instructional Strategies and Materials

(a) Knowledge

4.101 Knows many instructional techniques or strategies and how to adapt to a particular group of Learners.

4.102 Knows how to locate health instructional resources in the community.

4.103 Knows sources of health teaching material.

4.104 Knows how to design and develop health teaching materials.

4.105 Knows health teaching materials must be scientifically accurate and educationally sound.

(b) Comprehension

4.201 Understands the content and use of a variety of instructional techniques or strategies and their suitability for various pupil groups.

4.202 Understands how to enlist the aid of health teaching resource personnel in the community.

4.203 Understands how to gain access to resource material for health teaching.

4.204 Understands the technique of program design and development.

4.205 Understands the reasons for insisting on the validity and relevance of health teaching materials.

(c) Application

4.301 Can adapt a variety of instructional techniques or strategies to various pupil groups in the discussion of content material.

4.302 Can schedule in a logical order resource personnel from community agencies.

4.303 Can acquire and put to use appropriate health teaching materials.

4.304 Can apply appropriate teaching materials to support the presentation of content material.

4.305 Can validate teaching materials in use and demonstrate their value when applied as pedagogic tools.

(d) Analysis

4.401 Can analyze instructional strategies in terms of their compatibility with a variety of pupil groups.

4.402 Can analyze the appropriateness of health instructional resources in the community.

4.403 Can analyze the origin and availability of health teaching materials suitable for various pupil groups.

4.404 Can interpret the basic design of health teaching materials thereby facilitating the development of additional desiderata to meet future needs.

4.405 Can analyze the scientific validity and relevance of teaching materials.

(e) Synthesis

4.501 Can articulate a variety of pedagogical strategies into an effective learning experience for various pupil groups.

4.502 Can solicit and synchronize the services of community resource personnel representing various health agencies.

4.503 Can effectively integrate health teaching materials from a variety of sources.

4.504 Can combine a variety of health teaching materials to produce a coordinated learning experience.

4.505 Can articulate validated units of supplementary teaching materials to formulate a significant learning experience.

(f) Evaluation

4.601 Can appraise the degree of success evidenced by application of certain teaching strategies to various pupil groups.

4.602 Can evaluate the effectiveness of the various health instructional resource people in the local community.

4.603 Can appraise the quality, ie. relevance, authenticity, availability, etc. of health teaching materials.

4.604 Can judge the merits of newly planned or developed teaching materials.

4.605 Can verify the authenticity of available health teaching materials.

Module 5: Evaluation

(a) Knowledge

5.101 Knows of evaluative techniques suitable for assessing pupil attitudinal and behavioral changes, as they occur with each learning experience.

5.102 Knows of comparative measures to reveal the adequacy of individual test strategies.

(b) Comprehension

5.201 Understands assessment strategies designed to detect and measure pupil attitudinal and behavioral changes.

5.202 Understands existing and planned measuring instruments designed to assess the validity of various teaching strategies.

(c) Application

5.301 Adapts appropriate, valid measuring instruments for the purpose of detecting and estimating pupil attitudinal and behavioral changes.

5.302 Can apply measuring instruments to assess the validity of various teaching strategies applied to unique pupil groups.

(d) Analysis

5.401 Analyzes a variety of evaluative techniques regarding their potential for revealing pupil health attitudinal and behavioral changes.

5.402 Analyzes various evaluative techniques regarding their compatibility with specific pupil groups.

(e) Synthesis

5.501 Combines and orders evaluative strategies designed to reveal pupil attitudinal and behavioral changes from one health instruction program to another.

5.502 Articulates test instruments in a logical sequence to yield the most conclusive data regarding the quality of various teaching strategies.

(f) Evaluation

5.601 Can appraise pupil attitudinal and behavioral changes regarding health habits insofar as they evolve from their Health Education experiences.

5.602 Can evaluate changes in the health habits of pupils.

SUBELEMENT 4: PREVENTIVE HEALTH SERVICES

Module 6: Observation

(a) Knowledge

6.101 Knows that the teacher is expected to observe pupils continuously for evidence of health problems.

(b) Comprehension

6.201 Understands the manifestations or syndromes of certain common pupil ailments, especially those of a communicable nature.

(c) Application

6.301 Can tentatively identify those pupils experiencing health dysfunctions and if the condition is of a suspected communicable nature provide appropriate preventive recommendations to the entire class.

(d) Analysis

6.401 Can analyze the validity of the health assessment or screening techniques applied to pupils, and if necessary alter the program to accommodate diverse groups of individuals.

(e) Synthesis

6.501 Can combine relevant data regarding pupil observation by other teachers into a significant account of observable classroom "symptoms" for use by professional health personnel.

(f) Evaluation

6.601 Can appraise classroom teachers in their role as "suspecticians".

## Module 7: Pupil Screening

(a) Knowledge

7.101 Knows that teachers customarily administer simple scientific screening procedures, designed to identify pupils who may have health problems.

(b) Comprehension

7.201 Understands the role of classroom teacher as administrator of screening procedures designed to identify pupil's experiencing health and/or sensory difficulties.

(c) Application

7.301 Can make classroom use of standard screening procedures designed to identify pupils experiencing sensory and/or health problems.

(d) Analysis

7.401 Can analyze the quality of screening procedures and with proper aid from professional health personnel, design or adapt the most appropriate screening techniques for each unique pupil group.

(e) Synthesis

7.501 Can integrate pupil screening procedures into a K-12 program having both relevance to and instructional value for diverse pupil groups.

(f) Evaluation

7.601 Can examine and evaluate pupil screening procedures as to their relevancy, validity and continuity.

## Module 8: Health Records

(a) Knowledge

8.101 Knows that cumulative pupil health records are an important part of every school health program.

(b) Comprehension

8.201 Understands the present and future value that properly maintained health records have for individual pupils.

(c) Application

8.301 Can logically design or compose a pupil health-data recording system suitable for the K-12 documentation of individual normal, or irregular growth patterns, immunization data, sensory difficulties, and emotional impairments, or personality inadequacies.

(d) Analysis

8.401 Can analyze the relevancy of the health-record system as it is applied to diverse pupil groups.

(e) Synthesis

8.501 Can order and articulate systemically, the appropriate set of observation patterns for each unique pupil group.

(f) Evaluation

8.601 Can appraise the efficacy of various health-data recording systems, as they relate to diverse pupil groups.

Module 9: Emergencies

(a) Knowledge

9.101 Knows that each teacher has a responsibility to plan for the emergency care of pupils suffering from injury or illness.

(b) Comprehension

9.201 Understands the appropriate teacher remedial response to be taken in view of certain classroom emergencies.

(c) Application

9.301 Can plan or follow a scope and sequence of emergency remedial actions to be applied in the event of a riot, war, or natural disaster.

(d) Analysis

9.401 Can analyze the scope and sequence of a school health emergency plan to ascertain its degree of relevancy to unique pupil groups.

Module 10: Health Guidance

(a) Knowledge

10.101 Knows the critical need for individual health instruction and guidance for pupils and parents and subsequently directs them to community sources of assistance.

(b) Comprehension

10.201 Understands the span of cultural needs for guidance in pupil health care.

(c) Application

10.301 Can schedule pupil, parent and appropriate professional health personnel for health-guidance.

(d) Analysis

10.401 Can analyze the influences of community health personnel, as they relate to attitudinal and behavioral changes among program participants.

(e) Synthesis

10.501 Can help coordinate the activities of community health personnel to develop a total program of health guidance for local residents.

(f) Evaluation

10.601 Can objectively help appraise the health guidance activities rendered by school and community health personnel.

Module 11: Health Specialists and Resources

(a) Knowledge

11.101 Knows that health specialists such as physicians, nurses, nursing aides, dentists, dental hygienists, nutritionists, etc. need the teacher's full cooperation in referring pupils to them and in adapting school experiences to individual health needs.

(b) Comprehension

11.201 Understands the critical need for inter-professional communication and cooperation regarding pupil services administered by professional health personnel.

(c) Application

11.301 Can order and efficiently schedule the school utilization of professional health personnel for the purpose of safeguarding pupil health.

(d) Analysis

11.401 Can analyze the influence of professional health personnel, as it relates to the implementation of the total school health program.

(e) Synthesis

11.501 Can coordinate the plans and schedules of professional health personnel to provide pupils with optimal preventive health care.

(f) Evaluation

11.601 Can appraise the cooperative efforts of professional health personnel insofar as pupil health care is concerned.

SUBELEMENT 5: HEALTHFUL SCHOOL LIVING

Module 12: Physical and Mental

(a) Knowledge

12.101 Knows what is involved in maintaining a totally healthful school environment.

12.102 Knows the respective roles of administrator, physician, nurse, teacher, non-professionals and custodians in the provision of a healthy school environment.

12.103 Knows the physical factors which influence the classroom environment.

12.104 Knows the human (emotional or psychological) factors which determine the classroom "climate".

(b) Comprehension

12.201 Can translate the importance of providing a healthful school environment to encourage optimal pupil performance.

12.202 Can interpret the need for a coordinated assault by administrators, physicians, nurses, teachers and custodians, on deficiencies existing in the school environment.

12.203 Can interpret the interrelationship of physical facilities and emotional factors as they influence pupil productivity.

12.204 Can interpret the impact of the total school health environment on the human factors involved in learning.

(c) Application

12.301 Can present physical and aesthetic requirements for maintaining a healthful school environment.

12.302 Can present a description of the school environmental service activities provided by administrators, physicians, nurses, teachers and custodians.

12.303 Can reiterate those physical and human factors contributing to a proper academic climate.

(d) Analysis

12.401 Can analyze areas of the physical environment where deficiencies exist and formulate appropriate corrective measures to be applied in effecting proper improvements.

12.402 Can analyze areas of human inadequacy and develop appropriate corrective measures to improve the emotional climate in the classroom.

(e) Synthesis

12.501 Combines data relative to environmental factors to facilitate a strategy of environmental improvement.

12.502 Combines data relevant to human factors to facilitate strategy of academic improvement.

(f) Evaluation

12.601 Can objectively appraise physical facilities and aesthetic aspects of the classroom in terms of meeting pupil needs.

12.602 Can evaluate the emotional climate of the school and classroom and its influence on the development of individual pupils.

# SAFETY EDUCATION

C. Frazier Damron

## SAFETY EDUCATION

Abstract. Within the Safety Education Element of WETEP are five subelements, and within the subelements certain teacher characteristics have been defined as follows:

| | |
|---|---|
| Accidents: | The teacher evidences an understanding of the extent and scope of the accident problem, and of the elements which are involved in a program of prevention through educational programs. |
| Rationale: | The teacher can justify the inclusion of safety education in the school program. |
| Programs: | The teacher exhibits an ability to translate prevention needs into unified and sequential teaching programs. |
| Teaching: | The teacher defines learning goals realistically, and sets forth guidelines for individualized pupil competencies in verbalization knowledge, physical skills, and techniques of accident prevention. |
| Evaluation: | The teacher can measure the quality of objectives and can appraise the steps taken to reach these goals. |

Each of the subelements is organized so as to illustrate the relationship of the instructional modules within them to one another, and to illuminate the students' progress through them.

It is expected that Safety in the elementary school will be taught by each WETEP teacher in an appropriate integrated fashion. Their preparation, therefore, will include study within many of the modules of this element. They will learn the basic causes of accidents, understand logical reasons for the inclusion of specific safety content in the instructional program, understand teaching materials and resources in Safety Education, become knowledgeable about teaching procedures which will contribute to individualized learning progress, and understand various devices for evaluating pupil skills and comprehension in the field of Safety Education.

Those students choosing Safety as part of their area of specialization will expect to master modules on the higher cognitive levels, will become prepared to: evaluate the mechanics of accident reporting and analysis, assess the value of essential basic research projects and successful pilot programs in Safety Education, combine desirable features of attitudinal and behavioral goals for pupils of varying ages, and can evaluate standardized tests applicable to various aspects of Safety Education.

In the belief that the elementary school is responsible for the inclusion of Safety in its instructional program, WETEP has included in its own structure those modular resources necessary to a student working to achieve the objectives of the Element.

# SAFETY EDUCATION

The teaching of safety is a responsibility of the elementary school instructional program, and accordingly WETEP includes instructional modules in safety. Most of the teaching of safety at the elementary school level will be integrated with the course content of other subject areas or will occur when it relates to topics arising in other course areas. It is expected that safety education at the elementary level be structured in part as a separate course taught by a teacher with special qualifications in safety education.

The safety education element of WETEP is organized into five subelements. Various instructional techniques will be employed within each.

## The Safety Education Element

The flow chart, the Model of Safety Education Element, shows the structure of the subelement and modular resources available to a student as he works to achieve the objectives of the element. Each of the five subelements has an organization which reflects the relationship of the modules to one another and illustrates the student's progress through them.

After entering (ENTRY SA 10) the student decides on the basis of the prospectus whether he wishes to study within the element at this time (SA 15). If he continues after preassessment (SA 20), he enters the first subelement.

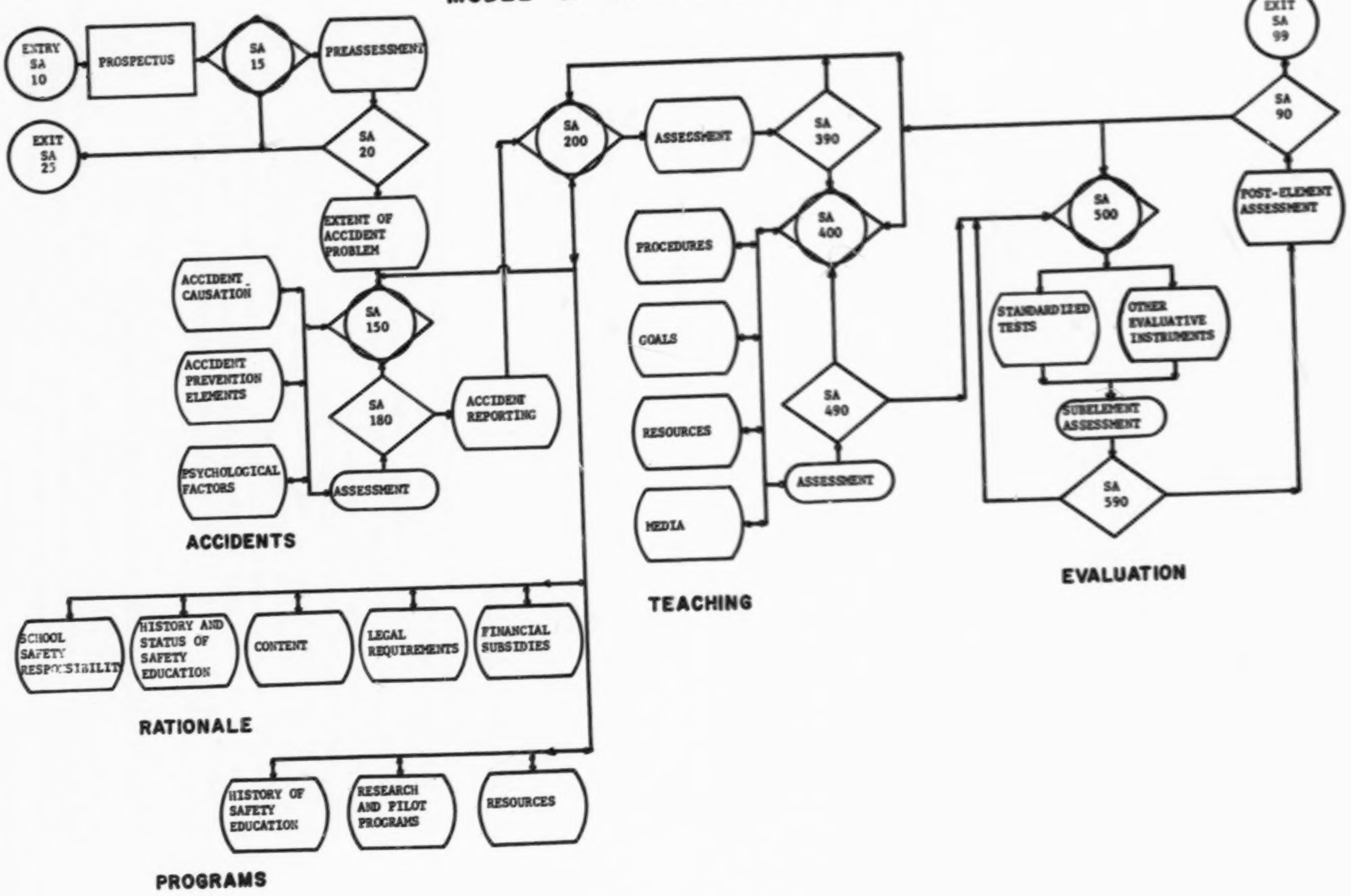
## Accidents Subelement

A prerequisite to effective instruction is thorough appreciation of the basic problems involved in the topic. Accordingly, the first module through which the WETEP student passes deals with the extent and scope of the existing accident problem. He will further learn the causes of accidents, what can be done to prevent them, and the nature and importance of psychological factors relating to accidents and their cause and prevention. After working among these three modules, his progress is assessed to determine whether he is prepared for the final module of the subelement, (SA 180). It concerns accident reporting and analysis, an important aspect of safety education. The WETEP teacher prepared in this respect may next analyze existing programs and plan future directions.

## Rationale Subelement and Programs Subelement

The student chooses the order in which he studies the modules within the Rationale and Programs subelements. Either he may select one to be mastered before going to the next, or he may study concurrently from

# MODEL OF SAFETY EDUCATION ELEMENT


ENTRY SA 10
PROSPECTUS
SA 15
PREASSESSMENT
EXIT SA 25
SA 20
EXTENT OF ACCIDENT PROBLEM
ACCIDENT CAUSATION
SA 150
ACCIDENT PREVENTION ELEMENTS
SA 180
ACCIDENT REPORTING
PSYCHOLOGICAL FACTORS
ASSESSMENT
ACCIDENTS
SCHOOL SAFETY RESPONSIBILITY
HISTORY AND STATUS OF SAFETY EDUCATION
CONTENT
LEGAL REQUIREMENTS
FINANCIAL SUBSIDIES
RATIONALE
HISTORY OF SAFETY EDUCATION
RESEARCH AND PILOT PROGRAMS
RESOURCES
PROGRAMS
SA 200
ASSESSMENT
SA 390
PROCEDURES
SA 400
GOALS
RESOURCES
SA 490
MEDIA
ASSESSMENT
TEACHING
SA 500
STANDARDIZED TESTS
OTHER EVALUATIVE INSTRUMENTS
SUBELEMENT ASSESSMENT
SA 590
EVALUATION
EXIT SA 99
SA 90
POST-ELEMENT ASSESSMENT

both subelements by selecting modules of interest. Additionally, the student or in-service teacher may return to the initial subelement for further study, if necessary or desired.

In the Rationale subelement, the student studies a school's responsibility toward safety education, the legal requirements affecting same, the content, the status of safety education, and financial subsidies. The Programs subelement contains modules for the study of the history of safety education, past and present research in safety education with suggested needed research, and available resources for work in safety education.

When the student feels prepared in both areas, he chooses (SA 200) to be assessed to determine whether he is ready to enter the teaching subelement.

## Teaching Subelement

Within the Teaching subelement, the student is not required to learn the content in any particular order, but he displays his proficiency in this subelement before progressing to the Evaluation subelement. Teaching procedures, goals, resources and media are the modular topics within the Teaching subelement.

Assessment, prior to decision point (SA 490), determines the student's degree of qualification for entry to the final subelement. This assessment will be accomplished through a conference with an appropriate instructor.

## Evaluation Subelement

The final subelement of the WETEP Safety Education Element is that of Evaluation. Here the student will learn of existing evaluative instruments, both standardized and others, for measuring pupil progress. Upon completion of this fifth and final subelement the student's, or in-service teacher's, progress will once again be evaluated in a conference.

## Objectives for Safety Education

The objectives for the Safety Education Element fall into five categories which constitute the subelements. The objectives of each subelement are arranged according to the levels of Bloom's taxonomy of the cognitive domain. Each module within the subelement is designed to fulfill stated objectives at several levels of the taxonomy. For example, the module entitled accident causation encompasses objectives 1.102, 1.202, 1.302, 1.402, 1.502, and 1.602.

1. ACCIDENTS (Evidences the understanding of the extent and scope of the accident problem, and the elements that are involved in a program of prevention through educational programs.)

(a) Knowledge

1.101 Knows the extent and scope of accident problems in schools, homes, on the highway, the public accident problem and those related to man-made and natural disasters.

1.102 Knows the basic causes of accidents.

1.103 Knows the elements of accident prevention in the school, home, on the highway, in public, in occupations and those related to man-made and natural disasters.

1.104 Knows the psychological factors related to safe human behavior.

1.105 Knows mechanics of accident reporting, analysis, interpretation, and follow-up procedures.

(b) Comprehension

1.201 Understands the extent and scope of accident problems in schools, homes, on the highway, in public, in occupations and those related to man-made and natural disasters.

1.202 Understands the basic causes of accidents.

1.203 Understands the elements of accident prevention in the school, home, on the highway, in public, in occupations and those related to man-made and natural disasters.

1.204 Understands the psychological factors related to safe human behavior.

1.205 Understands the mechanics of accident reporting, analysis, and follow-up procedures.

(c) Application

1.301 Can present statistical evidence relating to accidents in schools, homes, on the highway, in public, on-the-job and those related to man-made and natural disasters.

1.302 Can present evidence of the basic causes of accidents.

1.303 Can explain elements of accident prevention in the school, home, on the highway, in public, in occupations and those related to man-made and natural disasters.

1.304 Can assimilate psychological factors related to safe human behavior.

1.305 Can apply the mechanics of an accident reporting system.

(d) Analysis

1.401 Can analyze the extent and scope of accident problems in schools, homes, on the highways, the public accident problem, the occupational accident problem and those related to man-made or natural disasters.

1.402 Can analyze the basic causes of accidents.

1.403 Can analyze the element related to accident prevention in the school, home, highway, public, on-the-job and those related to man-made and natural disasters.

1.404 Can analyze the psychological factors related to safe human behavior.

1.405 Can analyze the mechanics of an accident reporting system.

(e) Synthesis

1.501 Can offer statistics relating to accidents in schools, homes, on the highway, in public, on-the-job, and those related to man-made or natural disasters.

1.502 Can synthesize basic causes of accidents.

1.503 Can articulate the basic causes of accidents stressing a need for emphasis in accident prevention in these areas.

1.504 Can integrate various psychological factors related to safe human behavior to emphasize the need for the psychological approach to accident prevention.

1.505 Can merge the results of accident reporting to present as evidence of the need for strong programs of accident prevention.

(f) Evaluation

1.601 Can evaluate the extent and scope of accident problems in schools, homes, on the highway, in public, on-the-job and those related to man-made and natural disasters.

1.602 Can objectively judge the basic causes of accidents.

1.603 Can appraise the elements of accident prevention in the school, home, on the highway, in public, on-the-job and those related to man-made or natural disasters.

1.604 Can reach logical conclusions relative to the psychological factors related to safe human behavior.

1.605 Can evaluate the mechanics of an accident reporting system.

2. RATIONALE (Can justify the inclusion of safety education in the school program.)

(a) Knowledge

2.101 Knows cogent reasons for school acceptance of responsibility in the area of accident prevention.

2.102 Knows the present status of safety education as a sequential step in the history of the movement--from its emergence to its projected future.

2.103 Knows logical reasons for the inclusion of specific content in the safety education program.

2.104 Knows state legal requirements relative to safety instruction in the schools.

2.105 Knows the financial subsidies that are realized when additional learning experiences are offered.

(b) Comprehension

2.201 Understands cogent reasons for school acceptance of responsibility in the area of accident prevention.

2.202 Understands the present status of safety education as a sequential step in the history of the movement--from its emergence to its projected future.

2.203 Understands logical reasons for the inclusion of specific content in the safety education program.

2.204 Understands legal requirements relative to safety instruction in the schools.

2.205 Understands that financial subsidies are available when additional learning experiences are offered.

(c) Application

2.301 Can present cogent reasons for school acceptance of responsibility in the area of accident prevention.

2.302 Can explain the present status of safety education with recommendations relative to future directions.

2.303 Can relate the logic behind the reasons for the inclusion of specific content in the safety education program.

2.304 Can explain the basis for state legal requirements relative to safety instruction in the schools.

2.305 Can present evidence of available financial subsidies resulting from the offering of additional learning experiences.

(d) Analysis

2.401 Can analyze cogent reasons for school acceptance of responsibility in the area of accident prevention.

2.402 Can analyze the present state of safety education with recommendations for future directions.

2.403 Can analyze reasons for the inclusion of specific content in the safety education program.

2.404 Can analyze the state legal requirements relative to safety instruction in the schools.

2.405 Can analyze financial subsidies available through the offering of additional learning experiences.

(e) Synthesis

2.501 Can articulate and document reasons why there should be school acceptance of responsibility in the area of accident prevention.

2.502 Can present plausible evidence of past examples of how the inclusion of safety education in the curriculum benefitted the school (or school system) as a whole.

2.503 Can present rationale behind the inclusion of specific content in the safety education program.

2.504 Can interpret state legal requirements relative to safety education in the schools.

2.505 Can articulate the advantages and disadvantages of considering financial subsidies available through the offering of additional learning experiences.

(f) Evaluation

2.601 Can evaluate cogent reasons for school acceptance of responsibility in the area of accident prevention.

2.602 Can evaluate the present status of safety education as a sequential step in the history of the movement--from its emergence to its projected future.

2.603 Can evaluate logical reasons for the inclusion of specific content in the safety education program.

2.604 Can evaluate state legal requirements relative to safety instruction in the schools.

2.605 Can evaluate financial subsidies that are realized when additional learning experiences are offered.

3. PROGRAMS (Exhibits ability to translate prevention needs into unified and sequential teaching programs.)

(a) Knowledge

3.101 Knows of the history of accident prevention and the emergence of the safety education movement.

3.102 Knows essential basic research projects and of successful pilot programs in safety education.

3.103 Knows resource and teaching materials in safety education.

(b) Comprehension

3.201 Understands the history of accident prevention and the emergence of the safety education movement.

3.202 Understands essential basic research projects and successful pilot programs in safety education.

3.203 Understands resource and teaching materials in safety education.

(c) Application

3.301 Can relate basic factors from historiographical studies of the safety education movement.

3.302 Can explain hypotheses and results of basic research projects and successful pilot programs in safety education.

3.303 Can present evidence of resource and teaching materials in safety education.

(d) Analysis

3.401 Can analyze history of accident prevention and the emergence of the safety education movement.

3.402 Can analyze essential basic research projects and successful pilot programs in safety education.

3.403 Can analyze resource and teaching materials in safety education.

(e) Synthesis

3.501 Can present rationale of historiographical studies of accident prevention and safety education to include need for these studies so that present programs may be more effectively understood.

3.502 Can interpret results of basic research projects and successful pilot programs in safety education and can combine desirable features.

3.503 Can integrate resource and teaching materials available in safety education.

(f) Evaluation

3.601 Can effectively appraise the history of accident prevention and the emergence of the safety education movement.

3.602 Can assess the value of essential basic research projects and successful pilot programs in safety education.

3.603 Can evaluate resource and teaching materials in safety education.

4. TEACHING (Defines the learning goals realistically and sets forth guidelines for individualized pupil competencies in verbalization knowledge, physical skills and techniques of accident prevention.)

(a) Knowledge

4.101 Knows teaching procedures that will contribute to individualized learning progress.

4.102 Knows definition of attitudinal and behavioral goals for varying ages of pupils.

4.103 Knows the principles of design and construction of audio-visual aids and general resource materials in safety education.

4.104 Knows mechanics involved in the use of resource media and teaching aids.

4.105 Knows the application of supplementary materials to teaching situations.

4.106 Knows sources of safety education enrichment media.

(b) Comprehension

4.201 Understands teaching procedures that will contribute to individualized learning progress.

4.202 Understands attitudinal and behavioral goals for varying ages of pupils.

4.203 Understands principles of design and construction of audio-visual aids and general resource materials in safety education.

4.204 Understands mechanics involved in the use of resource media and teaching aids.

4.205 Understands the application of supplementary materials to teaching situations.

4.206 Understands sources of safety education enrichment media.

(c) Application

4.301 Can present teaching procedures that will contribute to individualized learning progress.

4.302 Can define and present attitudinal and behavioral goals for varying ages of pupils.

4.303 Can relate and apply principles of design and construction of audio-visual aids and general resource materials in safety education.

4.304 Can explain mechanics involved in the use of resource media and teaching aids.

4.305 Can present the application of supplementary materials to teaching situations.

4.306 Can apply appropriate sources of safety education enrichment media.

(d) Analysis

4.401 Can analyze teaching procedures that will contribute to individualized learning progress.

4.402 Can analyze attitudinal and behavioral goals for varying ages of pupils.

4.403 Can analyze the principles of design and construction of audio-visual aids and general resource materials in safety education.

4.404 Can analyze mechanics involved in the use of resource media and teaching aids.

4.405 Can analyze the application of supplementary materials to teaching situations.

4.406 Can analyze the sources of safety education enrichment media.

(e) Synthesis

4.501 Can integrate teaching procedures that will contribute to individualized learning progress.

4.502 Can combine desirable features of attitudinal and behavioral goals for varying ages of pupils.

4.503 Can integrate principles of design and construction of audio-visual aids and general resource media and teaching aids.

4.504 Can articulate appropriate mechanics involved in the use of resource media and teaching aids.

4.505 Can effectively compare the application of supplementary materials to teaching situations.

4.506 Can articulate valid sources of safety education enrichment media.

(f) Evaluation

4.601 Can evaluate teaching procedures that will contribute to individualized learning progress.

4.602 Can evaluate attitudinal and behavioral goals for varying ages of pupils.

4.603 Can evaluate the principles of design and construction of audio-visual aids and general resource materials in safety education.

4.604 Can evaluate the mechanics involved in the use of resource media and teaching aids.

4.605 Can evaluate the application of supplementary materials to teaching situations.

4.606 Can evaluate sources of safety education enrichment media.

5. EVALUATION (Measures the quality of objectives and appraises steps taken to reach these goals.)

(a) Knowledge

5.101 Knows useful standardized tests applicable to various aspects of safety education.

5.102 Knows various devices for evaluating pupil skills and comprehension in the field of accident prevention.

(b) Comprehension

5.201 Understands useful standardized tests applicable to various aspects of safety education.

5.202 Understands various devices for evaluating pupil skills and comprehension in the field of accident prevention.

(c) Application

5.301 Can relate use of standardized tests applicable to various aspects of safety education.

5.302 Can explain various devices for evaluating pupil skills and comprehension in the field of accident prevention.

(d) Analysis

5.401 Can analyze useful standardized tests applicable to various aspects of safety education.

5.402 Can analyze various devices for evaluating pupil skills and comprehension in the field of accident prevention.

(e) Synthesis

5.501 Can organize standardized test items into tests applicable to various aspects of safety education.

5.502 Can combine merits of various devices for evaluating pupil skills and comprehension in the field of accident prevention.

(f) Evaluation

5.601 Can evaluate standardized tests applicable to various aspects of safety education.

5.602 Can assess devices for evaluating pupil skills and comprehension in the field of accident prevention.

# LEISURE EDUCATION

H. Clifton Hutchins, Chairman
Paul A. Knipping

## LEISURE EDUCATION

Abstract. Among desirable educational ends to be found in each individual are:

1) the knowledge that leisure is a reservoir of vast potential for good and for evil;
2) the recognition that leisure is a part of one's life for which he alone assumes primary responsibility; and
3) the understanding that the principal resources upon which he can draw for leisure use are found within his own person and within his environment.

WETEP provides for the attainment of these ends through:

1) the selection and preparation of teachers who have themselves lived richly and fully in their own leisure;
2) the utilization of instructional procedures which kindle lifelong interests in prospective teachers and emphasize satisfying forms of personal expression which will influence the lives of the children they teach;
3) the utilization of places most appropriate to each kind of learning, including the civil community and the natural environment;
4) capitalizing on extraclassroom learning experiences of a social, cultural, physical, or educational nature, both in school and in the community;
5) fostering a sense of responsibility in each WETEP teacher for helping to develop leisure resources in every student.

The role of the school in leisure education calls for an indirect rather than a direct approach. Developing an understanding about leisure is a kind of learning which is more often an accompaniment of experience than an object of experience. Attitudes toward leisure and its uses are not taught as such, although the skills and the knowledge necessary for intellectual exploration may be taught directly.

The school does bear responsibility for such leisure education functions as:

1) fostering a knowledge and understanding of
   - the human organism and human resources for leisure use;
   - the environment, natural and man-made, and its potential for leisure use;
   - the relationship of the uses of leisure to physical and mental health.
2) assisting individuals to develop personal resources for leisure;
3) protecting students from physical and moral dangers with which they are not yet ready to cope;
4) counseling students in the selection of leisure experiences that bring meaning to life;
5) kindling the desire for learning as an occupation of leisure.

Thus, these responsibilities will be among those sought in the WETEP teacher throughout the course of his professional activity.

# LEISURE EDUCATION

Survival in a leisure dominated world (as opposed to a world in which subsistence work demanded full attention) requires new emphases in education. It calls not so much for changes in the substance of learning as for changes in its application, for changes in the "how" more than in the "what" and for changes in the goals of learning more than in kind or amount. In a leisure-oriented society perceptual learning takes on great importance as the source of the qualitative elements that color the individual's response to experience and that influence his choices in reaching toward personal fulfillment. The greater the perceptual experiencing the better education a person has in the view of others, the reason being that he has a deeper reservoir to draw upon in his conversations, in making decisions, and in choosing his occupations of time.

Leisure is different things to different people: for one a fountain of opportunity; for another a well of despair. To a recent retiree, leisure may be a void to be filled with pastimes, amusements, and other largely meaningless experiences. To a youth, leisure becomes an opportunity for exploration and learning. To an adult at the summit of a career, leisure may be a will-o'-the-wisp, continually anticipated but seldom realized for more than a few fleeting minutes. To an aging person with failing sight and hearing there is no real leisure despite an abundance of free time for there is no real choice in the utilization of time.

Even today there are many people who still seek their personal satisfaction in work. Work is literally the balance wheel of their lives. These individuals face difficulties, first, because subsistence work in the amounts previously required is no longer necessary in today's world and the individual sooner or later finds himself unemployed or retired, his needs frustrated; second, because to an increasing degree the production jobs at which people work today place much less importance than formerly on the personal contribution of the worker and on his completion of a product that bears the stamp of good craftsmanship. In today's world production workers find few of the satisfactions that were once an integral part of their subsistence work. The motivation to achieve is missing and the monotony of their tasks may even exert a sedative influence on their productivity. The result is they seek their personal satisfactions during leisure. Because of greater job specialization and less need for manpower, together with the increase in leisure time, people must be educated to derive from their leisure pursuits those personal satisfactions once gained from subsistence work.

Among educational ends to be sought in each individual are: (1) the knowledge that leisure is a reservoir of vast potential for good and for evil; (2) the recognition that leisure is a part of one's life for which he alone assumes primary responsibility; and (3) the understanding that the principal resources upon which he can draw for leisure use are found within his own person and within his environment.

The attainment of these goals is not easy. The fostering of knowledge and understanding and the inculcation of attitudes and values in the young are fairly straightforward tasks. There is a concurrent obligation to help change the beliefs and attitudes of adults from whom children absorb so many of their values. And there is a further obligation to foster the ethical imperative that leisure like other learning is to be used for good rather than for evil purposes.

Herbert Spencer, in addressing himself to the question, "What knowledge is of most worth?" was probably the first to identify "the activities which make up the leisure part of life, devoted to the gratification of tastes and feelings" as one of the (five) principal goals of education. This was more than a century ago in 1860. In 1918, the Report of the Commission on the Reorganization of Secondary Education, identified what became known as the seven cardinal principles of secondary education, and twenty years later the Educational Policies Commission published The Purposes of Education in American Democracy. In both of these reports, the "worthy use of leisure time" was identified as a major educational goal.

The school role in leisure education calls for an indirect rather than a direct approach. The awakening of interests, the development of a reservoir of personal resources for leisure use and the engendering of the values that effectively determine choices of leisure occupations are kinds of learning that are more often accompaniments of experience than objects of experience. Attitudes toward leisure and its use are not taught as such although the skills and the knowledge necessary for intellectual exploration may be taught directly. The fostering of these outcomes is a task that is shared by the family, the churches, clubs and organizations, the library, and is influenced by a variety of social forces. Nevertheless, the school bears principal responsibility for a complex of leisure education functions which can be expressed in this way:

1. Fostering of knowledge and understanding

   of the nature and significance of leisure including its potential for good and evil in the life of every individual;

   of the uses or occupations of leisure, including recreation seeking behavior, and their relations to physical and mental health;

   of the human organism and human resources for leisure use;

   of the environment, both natural and man-made, and its potential for leisure use;

2. Assisting individuals to develop personal resources for leisure

   by encouragement to try many modes of expression consonant with individual capacities;

   by exploration of the environment for avocational as well as vocational purposes;

   by cooperation with others in the planning and executing of learning experiences;

   by inspiring learnings--cognitive, affective, psychomotor--each to a satisfying degree of usefulness;

3. Protecting students from physical and moral dangers with which they are not yet ready to cope;

4. Counselling students in the selection of leisure experiences that bring meaning to his life through the satisfaction of basic human needs;

5. Kindling the desire for learning as an occupation of leisure.

WETEP provides for the attainment of these ends through 1) the selection and preparation of teachers who have themselves lived richly and fully in their own leisure; 2) utilization of instructional procedures which kindle lifelong interests in prospective teachers and emphasize satisfying forms of personal expression which, in turn, will influence the lives of children they teach; 3) utilization of places most appropriate to each kind of learning, including use of both the civil community and the natural environment as the place and the materials of learning; 4) capitalizing extraclassroom learning experiences of social, cultural, physical and educational nature, both in school and community; 5) fostering the sense of responsibility in each WETEP teacher for helping to develop leisure resources in every student.

# GUIDANCE EDUCATION

Philip A. Perrone, Chairman

Ray E. Hosford

## GUIDANCE EDUCATION

Abstract. The WETEP teacher's foundation in sociological, psychological, and educational studies will be prior to his enrollment in the Guidance Element of his program. His education in Guidance will be essentially a period of study in two primary areas; learning about self, and learning to assist pupils with educational, vocational, and personal tasks.

Basic tools of the Guidance Element consist of interviewing and counseling practicums, the study of group processes, and sensitivity training experiences. The primary goal is to help the teacher gain, through practice, an integration of cognitive learning of facts and cognitive learning of theory. Increased understanding of self and others is sought by emphasizing sensitivity to interpersonal relationships and how they affect children's development, and sensitivity to attitudes of children and their probable reactions in given situations.

Every WETEP teacher will engage in activities designed to help him to understand his own behavior and how it is perceived by and affects others. Laboratory experiences, supervised counseling, self-analysis of interpersonal skills and relationships will be used to provide the WETEP teacher with opportunities for self-evaluation and further development of self-understanding.

Each teacher, through these experiences, will learn to assess more adequately his motives and strategies in dealing with people, others' reactions when he reacts with them, his own cognitive sets and how they affect impression formation, and the ways in which his behavior can affect the psychological and social development of others.

Basic personality profiles of attributes needed in successful teaching will be constructed. Every attempt will be made, from individual appraisal information, to help the WETEP teacher more adequately predict his own future success in teaching.

Basic to working with and helping individuals to change behavior is the interpersonal relationship. The Guidance Element of the WETEP teacher's program involves the trainee in numerous observations of experienced teachers and counselors working with elementary school children from many populations with varied learning and social problems.

As all students progress, they participate in an interviewing practicum. The WETEP teacher with a Guidance specialty participates in advanced practicums in counseling students. The practicum in interviewing and counseling includes learning how to communicate effectively with parents and colleagues, as well as with students.

## GUIDANCE EDUCATION

The major part of every WETEP teacher's guidance training is devoted to two aspects--learning about self, and learning to assist students with educational, vocational and personal tasks. In effect, this program is primarily affective rather than cognitive, applied rather than didactic.

The teacher's learnings in the sociological, psychological and educational foundations would be gained prior to enrollment in the counseling and guidance experience element of his program.

Basic tools of the guidance element consist of interviewing and counseling practicums, group processes and sensitivity training experiences. The primary goal is to help the teacher gain articulation between cognitive learnings of facts and theory with actual practice. Increased understanding of self and others is sought not for itself but for the value of its assumed consequences, such as sensitivity to interpersonal relationships and how they affect children's development, and being able to sense the attitudes of children and predicting how children might react in given situations.

### Learning About Self

Every WETEP teacher will engage in activities (e.g., Individual Counseling, T-Group, and Sensitivity Training) designed to help him understand his own behavior and how it is perceived by and affects others. Laboratory experiences, supervised counseling, self-analyses of interpersonal skills and relationships will be used to provide the WETEP teacher with opportunities for self-evaluation and further development of self-understanding.

Each teacher, through these experiences, will learn to assess more adequately (1) his motives and strategies used in dealing with people, (2) reactions in others when he reacts with them, (3) his own cognitive sets (value systems, stereotypes, etc.) and how they affect impression formation, and (4) the ways in which his behavior can affect the psychological and social development of others.

Basic personality profiles of attributes needed in successful teaching will be constructed. Individual appraisal information, feedback from participation in dyadic and group counseling experiences, and other idiographic data will be used from which the WETEP teacher can predict more adequately his own future success in teaching. These experiences should serve as a determinant to whether teaching would be the most satisfying vocation.

### Developing Counseling Skills

Basic to working with and helping individuals to change behavior is the interpersonal relationship. The Guidance Element of the WETEP teacher's program involves the trainee in numerous observations of experienced teachers and counselors working with elementary school children from many populations with varied learning and social problems. As all trainees progress, they are given a practicum in interviewing. The WETEP teacher with a major guidance function is given advanced practicums in counseling students. Practicum in interviewing and counseling include learning how to communicate effectively with parents and colleagues as well as students.

Competencies

1. Demonstrate competency in the utility of information sources, referrals, etc.
2. Demonstrate refined interview skills.
3. Demonstrate ability to develop and use interpersonal relationships with:
    a. Students
    b. Parents and others outside the formal school situation
    c. Referral agencies
4. Show application of the foundational fields (e.g., sociology, psychology) to working with children of various types in various situations (e.g., Low SES, ethnic, exceptional children, etc.).
5. Skill in consultation and case work.
6. Skill in observing behavior using knowledge of perceptual acts, values, etc., and how they affect what one perceives and recording significant actions of children.
7. Interpretation of test results; dyadic and to groups.
8. Knowledge of referral procedures.

Elementary school teachers with counseling backgrounds must be concerned with the conditions which affect the total development, academic and social, of the child. The teacher will attempt to identify the strengths and weaknesses in the child's emotional, physical, intellectual and social characteristics at an early age. Requirements in the program:

a. Principles of guidance and counseling--to provide the teacher with the nature and scope of guidance; changing of behavior, preventing social and academic problems, decision-making.

b. Individual appraisal--understandings of group and individual tests of personality, achievement, and interest inventories; basic statistical and observation techniques.

c. Counseling--supervised practicum designed to develop competence in the techniques and methods of counseling; individual and group.

d. Environmental information--occupational, educational, and social and how to use each or a combination of all in working with children.

# PHYSICAL EDUCATION

Marie R. Mullan

# PHYSICAL EDUCATION

Abstract. The Physical Education Element can be understood in its entirety only when viewed as a part of the total WETEP program. There will be considerable interaction between the modules in the Educational Psychology Element, the Curriculum and Instruction Element, the Health Element and the Communications Element. Also, basic science courses are required prior to admission to the Physical Education Element.

The Physical Education Element in WETEP places primary emphasis on the understanding of movement as it relates to self, as it can be observed in others, and as it can be improved through a systematic instructional program. This element includes three subelements which identify the broad characteristics of the WETEP teacher. Each subelement has two or more modules which serve to identify specifically the scope of the subelement. These take the following form:

Subelement A: Understanding Human Movement

- Module 1: Operational Understanding of Movement
- Module 2: Understanding of Movement Through the Observation of Others

Subelement B: Guiding Movement Experiences of Children

- Module 1: Motor Development
- Module 2: Solving Movement Problems
- Module 3: Creativity in Movement

Subelement C: Intercommunicating the Function of Physical Education

- Module 1: Interpreting
- Module 2: Supporting
- Module 3: Interaction

Illustrative objectives presented focus on the competencies to be developed in modules and will help to develop criteria for assessing progress and diagnosing performance levels.

The subelements and modules are not necessarily designed as sequential. However, it is anticipated that all WETEP students will develop an understanding of the first two subelements and the third subelement will be of particular concern for those with special interest in physical education. Students are able to move into and out of each module in order to more truly provide individualized sequences.

# PHYSICAL EDUCATION[1]

The Physical Education Element in WETEP is organized into three subelements: 1) Understanding Human Movement, 2) Guiding Movement Experiences for Children, and 3) Intercommunicating the Function of Physical Education. It is anticipated that all WETEP students will develop considerable understanding of the content in the first two subelements, Understanding Human Movement and Guiding Movement Experiences of Children. The other subelement, Intercommunicating the Function of Physical Education, will be of particular concern to those students with special interest in physical education or to those in-service teachers who are extending their knowledge about the development of curricular decisions for appropriate physical education activities.

The philosophy of physical education as exemplified in the WETEP teacher is one which places basic emphasis on the understanding of movement as it relates to self, as it can be observed in others, and as it can be improved through a systematic instructional program. Two other WETEP elements are closely related. The Health Element has a number of modules which provide instruction which is prerequisite to work of particular modules in the subelement, Understanding Human Movement. Likewise, there is considerable intersection between modules in the Educational Psychology Element and those in the Understanding Human Movement subelement. The Curriculum and Instruction Element contributes substantially to the subelement, Intercommunicating the Function of Physical Education. Additionally, basic science courses are required prior to admission to the Physical Education Element. Thus, the Physical Education Element can be understood in its entirety only when viewed as a part of the total WETEP program.

## Subelement A: Understanding Human Movement

### Module 1: Operational Understanding of Movement

The first module places major emphasis on the personal skill and self-application of knowledge and understanding about movement. Each of us moves, and in this element is viewed as a mover. In this subelement the student learns what it is he should know about movement and he learns this through an increased awareness and understanding of his own movement. Aspects of this module include:

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[1] Some of the specific objectives in Subelement B are adapted from A Model for the Preparation of Elementary School Teachers, Tallahassee: Florida State University, 1968.

a) Purpose of Movement
b) The Human Mechanism and How it Functions
c) Effects of Movement
d) Evaluation of Movement
e) Classifying or Developing a Taxonomy of Movement

Module 2: Understanding of Movement Through the Observation of Others

After having improved his understanding of movement in self, the WETEP student turns his attention in this module to the understanding of movement through the observation of others. Observing individual differences and variations in the movement of others together with the awareness of his own movement as unique, facilitates understanding movement. Aspects of this module include:

a) Why is the mover moving?
b) What has the mover to work with and how does it function?
c) What are the effects of movement on the mover?
d) How can one judge the movement observed?
e) How can one classify, group or organize the movement observed?

### Subelement B: Guiding Movement Experiences of Children

Module 1: Motor Development

The basic requirement for the understanding of general motor development related to movement is a part of the Educational Psychology Element which includes modules prerequisite to the work of this module. In this module, however, the consideration of general motor development is extended to include specifically the sequence in which motor patterns develop and the particular demands inherent in specialized movement tasks.

Module 2: Solving Movement Problems

From infancy, children are constantly at work solving problems which involve body movement. The pre-crawler makes random movements which through a series of successful problem solving activities lead him to the kinds of movements which begin to provide desired locomotion. Such problem solving continues throughout life as the individual strives to adapt the movements of a continually changing body to meet personal desires. The appropriate sequencing of activities and the individual guidance and assistance provided children is essential to the successful solving of movement problems. These experiences within the WETEP concept include also the kind of instruction which leads to increasing independence in the study and solution of personal movement problems.

**Module 3**: Creativity in Movement

The understanding of the body as a dynamic art form is recognized as an important objective for children. Creativity in movement is related to other WETEP elements. In particular, Art Education and Drama Education represent important related studies. The freedom of movement, techniques of exploring movement possibilities, impression (self-concept) as well as expression are all represented in this module.

### Subelement C: Intercommunicating the Function of Physical Education

**Module 1**: Interpreting

The physical educator is concerned about the role of movement and activity in society. From the study of history and philosophy he knows that concern for activity and movement is extended beyond the instructional school program.

**Module 2**: Supporting

General concerns of the school and community are of interest and a responsibility for the student with specific interest in Physical Education. There are issues such as instructional and recreational facilities, design of facilities, scheduling, time allotment, public relations, to be decided and/or supported. The physical educator plays a role in providing the kind of leadership, facilities and equipment necessary to achieve a well-planned and balanced physical education program including that which is both instructional and recreational in nature.

**Module 3**: Interaction

Physical Education plays an integral part in the total school environment. The physical educator serves with other members in the school to solve problems of general concern, as well as to serve a special function for individual children. His effective communication within the environment as consultant, resource person and teacher is essential to this function.

## Objectives

### Subelement A

**Module 1**: Operational Understanding of Movement

The student should demonstrate a continuing development of skill proficiency for the purpose of deepening his operational understanding of movement as this understanding is used in teaching.

A. The student should demonstrate his ability to move with control on a relatively stationary base while employing a minimum to optimum range of joint actions.

B. The student should demonstrate his ability to efficiently project his body in relation to variations in time and force.

C. The student should be able to efficiently project an object in relation to variations in time, force and target.

D. The student should demonstrate his ability to efficiently receive a moving object in relation to variations in time, force and source of projection.

Module 2: Understanding of Movement Through the Observation of Others

Through observation (video-tape, film, active performance) the student should demonstrate his ability to evaluate another's movement and prepare effective methods of increasing the efficiency of the movement.

A. The student should be able to demonstrate his understanding of the muscular system by explaining the relationship of muscles to joints in producing movement.

B. The student should be able to demonstrate his understanding of the nervous system by explaining, in elementary fashion, the role of kinesthesis in voluntary movement.

C. The student should be able to demonstrate his understanding of how the human structure maintains and increases its potential for movement by explaining the meaning and role of strength, flexibility and endurance.

D. Given films of an unskilled performer the student should be able to identify major faults in relation to appreciation and absorption of force, use of body levers, and to comment on the role played by posture and relaxation, relationship of gravity, velocity and angle of projection if appropriate.

Subelement B

Module 1: Motor Development

In all aspects of human growth there are developmental and sequential phases which can be identified in physical, psychological and social behavior patterns.

A. The student should be able to demonstrate his ability to apply knowledge of developmental growth patterns of childhood in comprehending significant elements of a physical education program in elementary school.

   1. Ability to analyze and assess developmental levels in areas of psychomotor skills.

   2. Ability to assess activity levels in terms of norms.

   3. Ability to recognize and identify those characteristics of children at a given developmental level which relate to the physical education program.

B. The student should be able to demonstrate his ability to distinguish, analyze and evaluate elements of basic motor patterns.

   1. Knowledge of classifications of basic motor patterns.

   2. Knowledge of basic mechanical principles as applied to body movement.

   3. Ability to recognize simple and complex movement patterns and to distinguish the basic movement elements involved.

   4. Ability to assess basic movement patterns in terms of given criteria.

C. The student should be able to demonstrate his knowledge of and ability to apply techniques for diagnosing and remedying faults in basic motor patterns.

   1. Ability to recognize and describe common faults in basic movement patterns.

   2. Knowledge of activities suitable for practicing and improving the quality of basic movement patterns.

   3. Ability to evaluate the status or progress of students in basic movement patterns.

   4. Ability to select activities suitable for the practice and improvement of basic movement patterns by children at a given developmental level.

Module 2: Solving Movement Problems

Elementary school physical education provides developmental movement experiences. Children learn to explore, discover, refine and master innate patterns and capacities in movement.

A. The student should demonstrate ability to distinguish, analyze and evaluate elements of basic motor patterns.

1. Ability to identify the uniqueness of each individual as well as likeness among individuals.
2. Ability to initiate needed improvement whenever possible.
3. Skill in the assessment of the child's developmental level and needs.

B. The student should demonstrate skill in planning and in conducting experiences which help children to work productively as individuals and as group members.

1. Ability to adjust learning opportunities to the needs, interests, and purposes of boys and girls.
2. Ability to relate that which is learned in physical education to the total learning experience of the child.
3. Ability to evaluate the outcomes of the learning experience.

C. The student should demonstrate ability to plan the physical education program including:

1. Statement of specific behavioral objectives communicating clearly that which is to be learned.
2. Designing learning environments and experiences appropriate for children.
3. Development of appropriate instructional procedures and tools.
4. Modification and adaptation of the program for the atypical child.

Module 3: Creativity in Movement

Setting the environment to develop wholesome concepts about the self is more important than accuracy in perceiving self. Children should be guided in feeling satisfaction in movement apart from concern for evaluation by others.

A. The student should demonstrate skill to guide boys and girls in learning:

   1. The significance of movement.

   2. How to use the body for functional and expressive purposes.

B. The student should demonstrate ability to guide children to explore and discover, refine and master innate patterns and capacities in movement gaining skill in locomotion, non-locomotion and manipulatory patterns.

C. The student should demonstrate ability to help boys and girls to gain kinesthetic awareness of the effort utilized in such action patterns--the elements of weight, time, space, flow--facilitating conscious control.

D. The student should demonstrate skill to stimulate in children imaginative and creative movement including creative use of materials.

Subelement C

Module 1: Interpreting

The role of movement and activity is a concern in our society. The physical educator should develop skill in interpreting physical eudcation to the school and community.

A. The student should be able to describe the role movement has played in the development of man.

B. The student should be able to describe the role movement plays in helping man to cope with his environment.

C. The student should be able to comment on the role movement plays in expression, communication, culture and art.

Module 2: Supporting

The school has the responsibility for providing the kind of leadership, facilities, and equipment necessary to achieve a well-planned and balanced instructional and recreational program.

A. The student should have the ability to identify the type of environment that will provide children with the best possible learning situation.

B. The student should demonstrate knowledge and ability to provide for the safety of children and competence in maintaining a safe and healthful environment for them.

C. The student should demonstrate skill in organizing and in conducting recreation and intramural activities appropriate for elementary children.

Module 3: Interacting

Education is a process representing joint cooperation of all concerned in the attainment of desired goals.

A. The student should demonstrate skill in working with all school personnel as consultant, demonstration teacher or as a resource person, conduct workshops, clinics and demonstration lessons, and in the preparation of in-service materials.

B. The student should demonstrate knowledge of ways of helping children to assess themselves and skill in guiding children in the discovery and use of their talents.

C. Skill in formulating and in implementing departmental policies, standards and procedures in such matters as:

1. Personal relationships and techniques of working with children.
2. Planning.
3. Coordinating public relations and personnel policies.
4. Budget, purchase, care and use of equipment and supplies.
5. Design of facilities.
6. Scheduling, staffing patterns, teaching loads and length of class period.

# MEDIA AND TECHNOLOGY EDUCATION

Charles Sullivan, Chairman

Maurice Iverson

## MEDIA AND TECHNOLOGY EDUCATION

Abstract. The WETEP concept, designed for a high degree of individualization of instruction, anticipates heavy reliance on media and technology, both in the teacher education program on the University of Wisconsin campus and in the schools in which WETEP students teach. Because of the extensive utilization of media and technology in the student's continuing learning environment, he will incidentally become quite sophisticated about the uses of these instructional aids. But, in spite of the 'rub-off' effects that participation in such a program will provide, it is believed that adequate knowledge and understanding of the production and utilization of media and technology can be attained only through direct instructional efforts which are systematically organized and made available to learners. For that purpose, the Media and Technology Education Element has been prepared.

The Media and Technology Education Element includes three subelements: 1) Instructional Media and Mediated Instruction; 2) Instructional Techniques; and 3) Research. Within these three subelements is included the instructional activity required of all WETEP teachers, together with some activities primarily designed for in-service education.

The Instructional Media and Mediated Instruction subelement includes instructional modules directed to the study of the selection and evaluation of materials, design and construction of materials, the utilization of instructional materials, and the utilization and management of a Learning Resources Center. Some study in each of the modules of this subelement concerned with the Utilization and Management of a Learning Resources Center will be left largely for the specialist in media and technology or for in-service education.

The Instructional Techniques Subelement includes modules on Programmed Instruction, Computer-Assisted Instruction and Instructional Simulation and Academic Games. These modules will be available but not required of all students. It is anticipated, however, that as students meet problems associated with any of these three major topics they will find work within the module appropriate to their instructional task in the schools.

The final subelement, Research, is prepared specifically for the specialist in media and technology or for the in-service teacher.

The objectives included in the Ohio report are used here because of their completeness, even though in many instances they are not entirely consistent with WETEP needs, philosophy and general objectives. Nonetheless, they represent illustrative objectives which will undergo continual refinement as WETEP is implemented.

# MEDIA AND TECHNOLOGY EDUCATION

The WETEP concept, designed for a high degree of individualization of instruction, anticipates heavy reliance on media and technology, both in the teacher education program on the University of Wisconsin campus and in the schools in which WETEP students teach. Because of the extensive utilization of media and technology in the student's continuing learning environment, he will incidentally become quite sophisticated about the uses of these instructional aids. But, in spite of the 'rub-off' effects that participation in such a program will provide, it is believed that adequate knowledge and understanding of the production and utilization of media and technology can be attained only through direct instructional efforts which are systematically organized and made available to learners. For that purpose, the Media and Technology Education Element has been prepared.[1]

The Media and Technology Education Element includes three subelements: 1) Instructional Media and Mediated Instruction; 2) Instructional Techniques; and 3) Research. Within these three subelements is included the instructional activity required of all WETEP teachers together with some activities primarily designed for in-service education.

As can be seen in Figure 1, the students will be pre-assessed following entry (ME 10) into the Media and Technology Education Element. The pre-assessment will be used to aid in the establishment of a unique program for that student. The student will be allowed to choose freely (ME 100) between the subelements and modules of the element to meet the objectives of his program. He may move (ME 100) to the element post-assessment whenever he wishes. That assessment will cover the objectives of his program. If he is cleared (ME 80), he will move out of the element (Exit ME 99). If he has not met the objectives (ME 80), he is advised to spend additional time in the modules.

The Instructional Media and Mediated Instruction subelement includes instructional modules directed to the study of the selection and evaluation of materials, design and construction of materials, the utilization of instructional materials, and the utilization and management of a Learning Resources Center. Some study in each of the modules of this subelement will be required of all WETEP students. On the other hand, the module concerned with the Utilization and Management of a Learning

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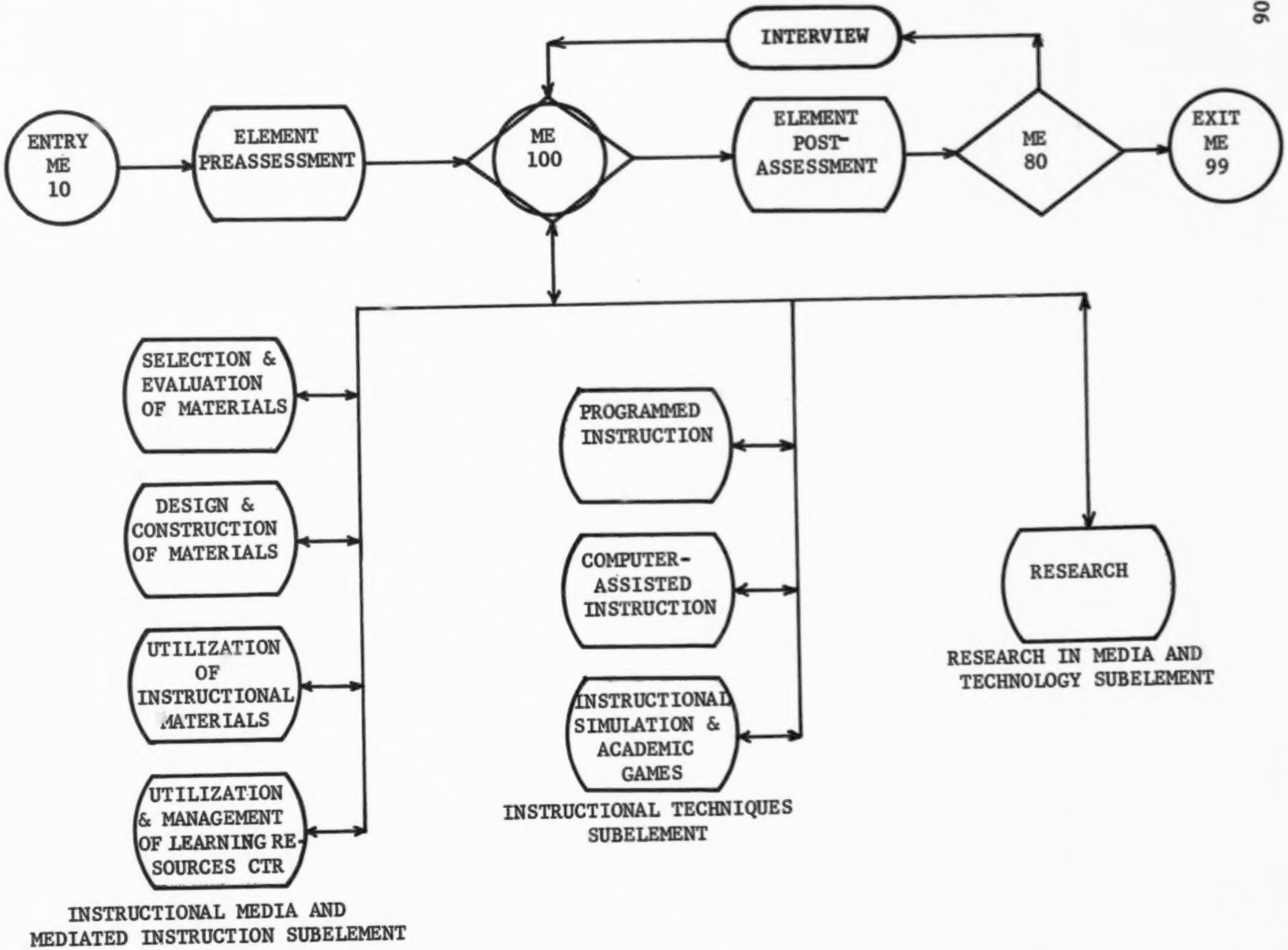
[1] The Media and Technology Education Element has been adopted from Educational Specifications for a Comprehensive Elementary Teacher Education Program. Toledo: The University of Toledo for A Consortium of the State Universities of Ohio, 1968.


ENTRY ME 10
ELEMENT PREASSESSMENT
ME 100
INTERVIEW
ELEMENT POST-ASSESSMENT
ME 80
EXIT ME 99
SELECTION & EVALUATION OF MATERIALS
DESIGN & CONSTRUCTION OF MATERIALS
UTILIZATION OF INSTRUCTIONAL MATERIALS
UTILIZATION & MANAGEMENT OF LEARNING RESOURCES CTR
INSTRUCTIONAL MEDIA AND MEDIATED INSTRUCTION SUBELEMENT
PROGRAMMED INSTRUCTION
COMPUTER-ASSISTED INSTRUCTION
INSTRUCTIONAL SIMULATION & ACADEMIC GAMES
INSTRUCTIONAL TECHNIQUES SUBELEMENT
RESEARCH
RESEARCH IN MEDIA AND TECHNOLOGY SUBELEMENT

MODEL OF THE MEDIA AND TECHNOLOGY EDUCATION ELEMENT

FIGURE 1

Resources Center will be left largely for the specialist in media and technology or for in-service education.

The Instructional Techniques Subelement includes modules on Programmed Instruction, Computer-Assisted Instruction and Instructional Simulation and Academic Games. These modules will be available but not required of all students. It is anticipated, however, that as students meet problems associated with any of these three major topics they will find work within the module appropriate to their instructional task in the schools.

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The objectives included in the Ohio report are used here because of their completeness, even though in many instances they are not entirely consistent with WETEP needs, philosophy and general objectives. Nonetheless, they represent illustrative objectives which will undergo continual refinement as WETEP is implemented. The flowchart in Figure 1 shows the context in which these objectives comprise the modules which become a part of the WETEP systems approach to instruction.

## Objectives for Education in Media and Technology

### Subelement I: Instructional Media and Mediated Instruction

#### Module A: Selection and Evaluation of Materials

1. The student will define and be able to distinguish between the following concepts:
   a. instructional media
   b. mediated instruction, and
   c. instructional technology.

2. The student will list the advantages of instructional media as:
   a. providing standard instruction
   b. giving the classroom teacher the time and opportunity to identify difficult concepts in the presentation, and provide remedial work
   c. allowing the teacher to attend to individual student differences
   d. focusing attention
   e. enriching experience
   f. providing common experience
   g. overcoming limitations of size, space, and time
   h. increasing student's interest
   i. providing presentational pacing and novelty.

3. The student will list criteria for the selection of media. Criteria are based upon:
   a. nature of the audience

   b. nature of the subject matter
   c. accessibility of the medium
   d. quality of the message
   e. quality of the production.

4. The student will list the sources where current information may be found on mediated instruction and instructional media.

5. The student will list and be able to obtain the sources of films and other visual materials that can be used as adjunctive instructional events for students, other teachers, and parents.

6. Given the sources for instructional media, the student will follow this procedure for acquisition and use:
   a. select and procure material on the basis of teaching task, cost, accessibility, and time available
   b. preview, evaluate, and modify before presentation
   c. test resource in the classroom
   d. record evaluations on the basis of student response

## Module B: Design and Construction of Materials

1. Given a concept to be taught, the student will evaluate the existing materials and decide whether new materials should be designed.

2. The student will list the advantages of having material produced locally:
   a. current information
   b. functional flexibility
   c. suitability for existing physical and environmental conditions
   d. suitability for specific local needs of teachers and elementary students.

3. The student will list the design and layout principles of:
   a. legibility
   b. simplicity
   c. unity
   d. balance
   e. emphasis
   f. workmanship.

4. The student will list as the visual tools for creating displays as:
   a. line
   b. shape
   c. size
   d. color
   e. texture
   f. space

5. The student will design and construct instructional materials such as:
   a. dry mountings and laminations
   b. tape recording

c. lettered captions, label or flash cards using Wrico, LeRoy
d. adhesion board display (flannel board, hook in loop, or magnetic board)
e. transparencies (single-sheet overlays) for overhead projection
f. bulletin boards
g. photographic slides of varying formats
h. charts
i. models
j. 8mm motion pictures
k. video tapes
l. printed materials; mimeograph, offset and spirit duplicator

Module C: Utilization of Instructional Materials

1. The student will describe the basic types of audiovisual equipment in a given learning environment by allowing for such variables as:
   a. size of audience
   b. physical conditions--temperature, ventilation and lighting
   c. legibility
   d. projection screens
   e. room acoustics
   f. light control
   g. storage and display facilities.

2. Given various types of audiovisual equipment, and a set of operating instructions for each, the student will locate the basic parts of the machines, explain their functions, and operate the equipment.

3. The student will instruct and supervise new teachers and other members of the multiunit, such as teacher aides, in the use of materials and equipment.

4. The student will list the available audiovisual machines, indicating their relative cost, ease of maintenance, reliability and operation.

5. Given a curriculum topic, the student will write the objectives of his instruction in behavioral terms, list the commercially available instructional media, design and construct special materials in accordance with teaching-learning concepts, and deliver an integrated multi-media presentation which will most effectively accomplish the behavioral objectives of his lesson, program, or presentation.

6. The student will prepare mediated lessons for specified concepts using basic materials available in a classroom such as charts, chalkboards, and flash cards.

7. Given a specific concept to be taught by mediated instruction, the student will supplement the mediated presentation of this concept with appropriate introduction, summary, and follow-up evaluation.

8. The student will prepare a presentation for his administrator, parents, or other appropriate audience, on any topic related to instructional media.

9. The student will list the characteristics, sources, contributions, and limitations of printed media such as:
   a. books
   b. reference tools
   c. periodicals
   d. journals
   e. art prints
   f. pictures
   g. posters
   h. charts
   i. maps.

10. The student will list the characteristics, sources, utilization principles, advantages, limitations of the following projected media:
    a. motion pictures
    b. television: broadcast, CCTV, VTR
    c. filmstrips
    d. overhead transparencies.

11. The student will list the characteristics, sources, utilization principles, production, advantages, limitations of the following audio media:
    a. disc recordings
    b. tape recordings
    c. telelecture.

12. The student will list the characteristics, sources, utilization principles, advantages, limitations of the following three-dimensional media:
    a. realia
    b. models and mock-ups
    c. drama
    d. community resources.

13. The student will list the characteristics, sources, utilization principles, production techniques, advantages, limitations of the following display media:
    a. bulletin boards
    b. exhibits
    c. adhesion boards; chalk, peg, magnet, hook n' loop.

14. The student will demonstrate his ability to use printed media either alone or in combination with other media in teaching a given concept by:
    a. identifying criterion items in the printed media that are relative to demonstrations of the given concept.
    b. by devising a method to require the learner to respond to criterion items contained in the printed media
    c. writing a lesson plan that sequences all presentations for optimum acquisition of the concept.

15. Given a concept to be taught by using three types of mediated instruction, one of which is projected media, the student will demonstrate his ability to use projected media by:
    a. identifying instructional sequences that can be presented through the use of an overhead projector
    b. writing a lesson plan that best sequences the presentation of all media for optimum concept acquisition
    c. preparing the materials and teaching the projected media portion of the presentation to a peer group in a simulated classroom situation.

16. The student will demonstrate his ability to use audio media either alone or in combination with two other media in teaching a given concept by:
    a. identifying the criterion items in the audio media relative to the given concept,
    b. devising a method to require the learner to respond to criterion items contained in the audio media
    c. writing a lesson plan that sequences all presentations for optimum acquisition of the concept
    d. teaching the criterion items of the concept by using the audio media portion of the lesson plan.

17. Given a concept to be taught by a given instructional media, the student will demonstrate his ability to use three-dimensional media and display media either alone or in combination with other media in teaching the concept by:
    a. identifying how three-dimensional models and displays can be used by the learner to demonstrate the concept
    b. writing a lesson plan that requires the use of three-dimensional models or displays at the appropriate points in the instructional sequence
    c. presenting the models or display portion of the lesson plan to a peer group in a simulated classroom situation.

### Module D: Utilization and Management of Learning Resources Center

1. The student will describe procedures for obtaining consultative aid for the location, acquisition, planning and design, and utilization of instructional materials, audiovisual equipment and mediated instructional programs.

2. The student will describe the following personnel required to staff a Media Center and their responsibilities:
    a. media specialist-supervisor
    b. secretary or clerk
    c. technicians
    d. aides
    e. instructional materials librarian.

3. The student will describe the procedure used in obtaining equipment and materials from the Media Center, including:
    a. advance arrangements
    b. locating the equipment and materials

   c. completing checkout records
   d. transporting arrangements
   e. borrowing procedures.

4. The student will locate the following facilities in a Media Center and label their respective functions:
   a. working and training area
   b. graphics section
   c. recording facility
   d. materials distribution section
   e. equipment storage section
   f. equipment maintenance section
   g. administrative section
   h. materials collection.

5. The student will develop a rationale for the existence of a Media Center, from which he will design a physical layout to accommodate such functions as:
   a. language laboratory
   b. listening posts
   c. remote access systems
   d. computer terminals
   e. learning carrels
   f. subject area materials
   g. materials production
   h. equipment storage, maintenance, and distribution
   i. large and small group conference areas
   j. administrative areas.

6. The student will develop a plan for an educational media program at the school level that provides for:
   a. administration of budgets, finances, purchases, and other fiscal matters
   b. supervision of personnel
   c. adequate space and facilities
   d. efficient control of materials collections and equipment
   e. professional media consultation for clientele.

7. Given descriptions of needs and budgets of various schools, the student will select appropriate equipment and materials for each school's media program based on:
   a. cost
   b. ease of operation
   c. availability of materials
   d. contribution to the educational program.

8. The student will organize and supervise a library of instructional material to include provision for:
   a. classification, cataloging, and booking system
   b. card catalog of all materials
   c. shelf list and accession information
   d. replacement policies
   e. reading and preview facilities

   e. shelving, storing, and displaying
   g. easy and rapid access to information.

9. The student will organize and supervise a materials production facility which provides for:
   a. basic local production of requested materials
   b. assistance in planning and designing materials
   c. instruction in basic graphics techniques
   d. inventory of graphics supplies.

10. The student will devise and operate a program of audiovisual equipment utilization to include:
   a. inventory of machines (use and maintenance history)
   b. maintenance and cleaning schedule
   c. teacher instruction in their use and care
   d. projectionists and operators
   e. performance of basic level repair
   f. scheduling procedures
   g. acquisition of new and replacement equipment.

11. The administrator will provide space, facilities, funds, and staff to support a media program designed to:
   a. instruct and supervise instructional personnel in the use of materials and equipment
   b. provide collections of instructional materials and attendant equipment for classroom and library use
   c. offer assistance in the production of locally prepared materials.

12. The student will develop a procedure for the evaluation of the effectiveness of educational media program in his school.

Subelement II: Instructional Techniques

Module A: Programmed Instruction

1. Given examples of various training situations in which instructional programs should be employed, the student will find appropriate available instructional programs, making his selection on the basis of:
   a. subject matter
   b. entering behavior of the target population
   c. elementary student time required
   d. equipment and materials required
   e. cost
   f. a description of entering behavior of the target population
   g. behavioral objectives
   h. validation data and conditions of validation testing
   i. instructions for administering the program.

2. Given situations requiring specific information about programmed instruction, the student will use the sources of information to locate the appropriate information and will write the appropriate reference citation(s) for each situation.

3. Given descriptions of various visual training situations in which programmed films and other visual materials should be used, the student will make his selection using as much of the information listed below as is available and on the basis of the principles of programmed instruction as stated in Objective 9.
    a. subject matter
    b. necessary entering behavior
    c. elementary student time required
    d. necessary equipment and materials
    e. cost

4. Given a set of objectives, the student will select those that are measurable behavioral objectives by identifying in each given objective the following elements:
    a. a statement of the task the student will perform
    b. a description of the conditions under which the student will be required to perform the task
    c. the acceptable level of performance.

5. Given descriptions of teaching tasks and sources of information, the student will write measurable behavioral objectives.

6. The student will list the following as possible functions of programmed instruction:
    a. allows a student who missed a session to continue without skipping
    b. allows a student who has moved into the district to review or move ahead
    c. allows a student to do remedial work
    d. allows a student to do enrichment work; and the student will list the following as an instructional limitation of programmed instruction: differential student completion rate of programmed instruction requires the teacher to plan supplementary activities.

7. The student will define an instructional program as a sequence of instructional events which accepts the responsibility for efficiently accomplishing specified changes from specified initial student competencies to specified terminal student competencies.

8. Given examples of various instructional events, the student will identify the stimulus, response, and confirmation in each.

9. The student will list the following as the principles of programmed instruction:
    a. self-pacing
    b. presentation of information in the largest possible negotiable step
    c. active responding
    d. stimulus control
    e. gradual withdrawal
    f. immediate confirmation of student responses
    g. program revision based on student performance.

10. Given examples of programmed instruction and non-programmed instruction, the student will identify which are programmed instruction:
    a. programmed notebook
    b. progress check
    c. pre- or post-test
    d. flash cards for response.

11. The student will prepare and present an explanation of programmed instruction for:
    a. parents
    b. elementary pupils
    c. another teacher
    d. school administrator.

12. The student will draw diagrams that illustrate the topographical relationship of the structural components of the following types of instructional programs:
    a. linear
    b. intrinsic
    c. linear adjunctive.

13. The student will identify, define, and evaluate characteristics of programmed instruction prompting techniques.

14. Given examples of various programmed instructional events, the student will classify each event according to prompting characteristics identified above and identify overprompted and/or copy frames.

15. The student will list and define the following types of learning tasks that may be taught by an instructional program:
    a. discrimination
    b. generalization
    c. concept formation
    d. problem solving
    e. procedure learning.

16. Given various examples of sequences ten to fifteen frames long, the student will identify the type of teaching task which is accomplished in each sequence.

17. The student will define the following types of pupil performance data that he might obtain when his elementary pupils use an instructional program:
    a. frame error rate
    b. post-test item error rates
    c. pre-test and post-test scores and gains;
    and he will indicate the significance of each type of data in:
    a. evaluating pupil performance
    b. evaluating programmed instruction materials.

18. Given examples of various instructional programs with various sets of pupil performance data, the student will:

   a. evaluate the success or failure of the programmed materials according to criteria
   b. recommend and justify (1) continued use of, (2) modification, or (3) rejection of the programmed instruction materials under the same circumstances.

19. Given a programmed instruction text, a new presentation, a teaching machine, or computer-assisted instruction and pupil performance data resulting from the use of the instructional material or technique, the student will determine:
   a. were the objectives met, and
   b. could the material/technique accomplish the objectives.

20. Given a group of elementary pupils and a specific learning task, the student will select an appropriate instructional program, administer the program to the elementary pupils, acquire student performance data, evaluate this data, and interpret the data with respect to the effectiveness of the instructional program.

21. The student will implement schedules of instructional sequences and adjunctive material appropriate for each pupil; and will evaluate the effectiveness of the schedules based on:
   a. pupil performance
   b. the adequacy of the pupil's preparation for individual differences in terms of ability, completion time, and interest
   c. the exhaustiveness of the use of available media, materials, space, and time.

22. The student will list the following as some of the features of a teaching machine:
   a. permit uniform administration of the program
   b. prevent inadvertent peeking
   c. provide automatic response evaluation
   d. provide systematic recording of student performance data
   e. prevent random responding.

23. Given examples of various teaching machines with operational programs, the student will identify on each machine the various features which control the stimulus or verify the response (e.g., the number of errors, number of responses, timed display, non-reversible response control, etc.)

24. The student will identify that the instructional program, not the teaching machine, leads the student to terminal behavior.

25. The student will prepare a programmed presentation of from 30 to 50 frames in which active responding, immediate confirmation, and branching are employed.

26. The student will describe various record-keeping procedures in cataloging, storing, and accessioning instructional programs in a classroom or group of classrooms used by students of the same age or some other common characteristic relevant to programmed instruction use.

27. The student will prepare instruction guides which give procedures and instructions for accessioning and scheduling instructional programs.

28. The student will evaluate the effectiveness of schedules of instructional sequences and adjunctive material that have been prepared for groups of pupils on the basis of:
    a. pupil performance data
    b. the adequacy of the teacher's preparation for individual differences in terms of ability, completion time, and interest
    c. the exhaustiveness of the use of available media materials, space and time.

29. The student will supervise teachers in real situations in following his instructions for teachers.

30. Given a set of requests from teachers for use of instructional programs, the student will implement his plan for scheduling and accessioning instructional programs and making necessary physical arrangements.

31. The student will evaluate requests for instructional programs from teachers based on cost, student time, and storage and handling of materials, and will give reasons for his approval or disapproval to a group of teachers.

32. The student will evaluate the effectiveness of the existing procedures for cataloging, storing, scheduling, accessioning, and making physical arrangements for the use of instructional programs.

### Module B: Computer-Assisted Instruction

1. The student will list and identify the equipment (hardware) components of a CAI system, including student terminal (media) components, and describe the function of each.

2. The student will describe the following types of programs (software) used in the CAI system:
    a. compiler-translator
    b. instructional program using coursewriter, inform, or similar author language
    c. utility (records) program.

3. The student will describe the possible applications of a computer to instructional purposes, including:
    a. presentation of programmed instructional sequences
        1. tutorial mode, including drill
        2. inquiry mode
        3. laboratory (language, math, science) adjunct
    b. instructional management system
    c. calculator (math, science labs)
    d. information retrieval (library).

4. The student will identify instructional areas, topics, and/or types of training (such as discrimination or generalization) which are appropriate for each type of CAI application.

5. The student will list the modes by which:
   a. instructional sequences may be presented to pupils
   b. pupils may respond and match with instructional sequences for which each is appropriate.

6. The student will list the advantages attributed to CAI, including:
   a. possibilities for individualizing instruction
   b. "patience" when reteaching or repeating
   c. continual revision (updating) of program using pupil response data
   d. coordination of presentations by several media.

7. The student will list the disadvantages or limitations of CAI, including:
   a. hardware problems
   b. software limitations, especially the lack of good instructional programs
   c. cost.

8. The student will explain the potential of CAI in individualizing the instructional process by describing possible provisions for:
   a. permitting different student progress rates
   b. using identified characteristics of the learner to determine the type of program he receives
   c. allowing continual checking or testing, and presenting a learning sequence accordingly
   d. applying carefully planned and controlled reinforcement schedules.

9. The student will explain how CAI can aid the teacher in evaluating both the performance of pupils and the CAI instructional sequence by describing the computer capability for record storage, data retrieval, and calculation of summary data.

10. The student will:
    a. list the types of response data (such as latency time, number of correct responses, number and exact wrong responses, etc.) that may be obtained from a CAI program
    b. describe their usefulness in CAI development, experimentation, and use
    c. state the relevant data that could be requested for various types of teaching tasks.

11. The student will describe the possible interpretations and/or limitations of various types of summary data for:
    a. evaluating elementary pupil performance and prescribing subsequent activity
    b. evaluating the quality of CAI instruction and revising the program.

12. Given examples of various instructional sequences and summary data, the student will:
    a. interpret the student performance records
    b. correctly match the examples of subsequent prescriptions with the data
    c. prepare prescriptions.

13. The student will request pupil performance data by preparing necessary written specification forms.

14. Given a request for summary data from an existing CAI instructional sequence and a list of the available utility programs, the student will:
    a. write the additional instructions for supplying the summary data
    b. document the program changes in the appropriate record file in the CAI computer room.

15. The student will prepare supplementary (adjunctive) exercises for existing CAI materials.

16. The student will analyze an instructional topic to determine what aspects are best presented by CAI and which should be taught off-line.

17. Using pupil performance data, the student will revise an existing CAI instructional sequence.

18. The student will:
    a. develop a short instructional sequence and code (flow chart) the program in an author language, using various presentation and student response modes
    b. test (debug) and revise the program as necessary
    c. run the program with a group of elementary pupils.

19. The student will list the sources of instructional programs for CAI systems.

20. The student will list the types, purposes, and uses of CAI research, citing sources of information on CAI experimentation and development.

21. The student will review and analyze (evaluate) research on CAI, writing an overview on the status of CAI.

22. The student will list criteria for evaluating various CAI systems (including time-sharing systems), including:
    a. features and limitations of equipment (including cost)
    b. space requirements
    c. availability and quality of instructional materials
    d. operational qualities of the equipment
    e. expected applicability to local school (teaching) needs.

23. The student will prepare and present an explanation of the use of CAI for:
    a. parents
    b. another teacher
    c. a visitor who is unfamiliar with CAI.

24. The student will describe the features and limitations of various CAI systems in presentations suitable for:
    a. his superiors
    b. parents
    c. teachers.

25. Given the procedures for operation of a CAI system, the student will:
    a. identify the steps that are performed by the computer operator or technician, the teacher, and the pupil
    b. perform the operations that are done by the teacher and those that are done by the pupil
    c. demonstrate to a group of elementary pupils the steps necessary to use a CAI terminal
    d. run pupils on an existing instructional sequence.

26. The student will operate the CAI system equipment and instruct teachers (and pupils) to operate the terminals.

27. The student will list the personnel required by a CAI system and state the responsibilities of each.

28. The student will list the advance information that should be given to the CAI system operator to arrange for pupils to use the CAI equipment and programs.

29. The student will describe the records that must be kept in the CAI computer room.

30. The student will:
    a. describe the procedure for cataloging, storing and running computer programs
    b. follow the procedure and complete the necessary records for a group of elementary pupils.

31. Given examples of advance information requesting use of the CAI system, the student will describe the scheduling, programming, and other arrangements that must be made.

32. The student will prepare a plan for installing a CAI system in his school, specifying location, personnel to be hired, orientation of teachers, and plans for use.

33. The student will develop a plan to evaluate the effectiveness of the use of the CAI system by teachers.

### Module C: Instructional Simulation and Academic Games

1. The student will define instructional simulation as:
    a. a technique of modeling (physically, iconically, verbally, or mathematically) some aspects of a real or proposed instructional system, process, or environment; or
    b. the model (physical, iconic, verbal, or mathematical) of some aspects of a real or proposed instructional system, process or environment. (Twelker, 1968)

2. The student will define an academic game as being a subset of instructional simulation in which the players (learners), through competitive activities, learn the dimensions and rules governing a particular system which has been modeled. (Trzebiatowski, 1968)

3. The student will list the essential properties of games as:
   a. players, each striving to achieve his goal
   b. having a small fixed number of players
   c. having rules which limit the range and define the nature of legitimate actions of the players
   d. establishing the basic order, sequence, and structure within which the actions take place
   e. delimited in time with a defined end
   f. rules constituting a temporary suspension of some of the ordinary activities of life and rules of behavior by substituting for them these special time and space delimited ones.

4. The student will be able to write a one-page essay on the theory and rationale undergirding simulation and academic games.

5. The student will be able to name and cite examples of each of the following types of instructional simulations:
   a. demonstrational, e.g., planetariums
   b. contextual response, e.g., academic games
   c. performance criterion, e.g., Link Trainers.

6. The student will be able to name and cite examples of each of the following types of academic games--those which are designed primarily to:
   a. motivate and increase learner interest
   b. teach subject matter; facts, concepts, principles, etc.
   c. develop skill in applying principles, rules, laws, etc.

7. The student will be able to list the advantages of using instructional simulation and academic games in teaching.

8. The student will be able to list the limitations of using instructional simulation and academic games in teaching.

9. The student will list the major sources, simulations, and games which can be used:
   a. in elementary education
   b. in elementary teacher education

10. The student will prepare a reference file of simulations and games for elementary pupils which can be played in conjunction with each of the major subject areas; i.e. history, social studies, mathematics.

11. The student will write a critical review of the simulated situations and academic games which have been developed or could be modified for in-service and pre-service training of elementary teachers. The simulated situations and games reviewed should include:

a. Cruickshank's teaching simulation techniques
b. Kersh's Classroom Simulation
c. Utsey, Wallen, and Beldin's techniques for training reading teachers
d. UCEA's In-Basket Out-Basket techniques
e. Computer-based simulation techniques
g. Multi-media simulation chambers.

12. The student will select simulations and games for instructional purposes based on:
    a. cost
    b. availability
    c. research and development data
    d. course objectives
    e. local student's individual needs
    f. learning tasks to be achieved.

13. The student will collect and evaluate the research and development data needed for selection from:
    a. producers' and distributors' literature, i.e., type and purpose, development and validation data, etc.
    b. published research reports
    c. pupil performance data collected locally.

14. The student will describe the parameters of games and simulations as:
    a. optimum frequency at which they may be played
    b. proportion of time to be allotted
    c. time required to play most games
    d. maximum time they may be played without bordeom
    e. suitability of the equipment and physical facilities needed for simulating situations
    f. suitability of physical facilities for simulating situations.

15. The student will list the following as the necessary topics for a 15-minute pre-game explanation:
    a. problem of the game
    b. actors and their objectives
    c. physical layout
    d. demonstration of the first move.

16. Given various games and simulated situations to be used for specific instructional purposes, the student will prepare and present a pre-game explanation for each to a simulated audience.

17. The student will describe the procedure that he must follow in implementing a game as:
    a. playing the game in a simulated caassroom situation
    b. reading instructions
    c. modifying the game, if necessary, to meet the needs of the class
    d. preparing and giving a pre-game explanation
    e. conducting a discussion subsequent to the game, relating it to class work.

18. The student will list as possible ways to cast a game:
    a. volunteers
    b. picking numbers from a hat
    c. random assignment
    d. deliberate casting.

19. Given specific games to be implemented, the student will follow the specified procedures.

20. The student will describe the role of the teacher during a game.

21. The student will prepare and present explanations of the uses of simulation and games to:
    a. teachers
    b. parents
    c. school board
    d. other appropriate audiences.

22. Given a simulated teaching activity, the student will evaluate the student teachers' interest, and decide whether to:
    a. stop the activity and begin another activity
    b. stop the activity and hold a class discussion
    c. continue the simulation exercise.

23. Given a game situation, the student will evaluate the elementary pupils' interest, and decide whether to:
    a. stop the game and do something else
    b. stop the game and hold class discussion
    c. continue the game.

24. The student will evaluate the simulation or game and modify it, if necessary, based on participant response and pupil performance data.

25. Given a class discussion following a simulation or a game, and pupil performance data, the student can evaluate the instructional ability of the simulation or game for his elementary pupils or student teachers, and decide whether to:
    a. use the game again in the present form
    b. modify the game format
    c. discard the game.

26. The student will evaluate a teacher's effectiveness in implementing simulations and games.

27. The student will evaluate requests for simulations and games on the basis of cost, instructional effectiveness, and requirements for game administration.

28. Given deficiencies in a simulation or game due to lack of interest or misunderstanding of the principles being taught, the student will modify the game on the basis of:
    a. elementary pupil feedback
    b. teacher evaluation
    c. pupil performance data

29. Given that a game is desired to teach relationships for which there is no existing game, the student will design, test, redesign, and retest a game of his own invention, using the principles of simulation and game design.

## Subelement III: Research

### Module A: Research in Educational Technology

1. Given a specific training need in his field and a specific target population, the student will locate existing research on the use of media. He will design an instructional system using appropriate instructional media based on the results of existing research. He will implement this system in a classroom, test its effectiveness, and make appropriate revisions.

2. When instructed to identify reference works that contain results of research on the use of educational media in elementary education, the student will identify the following:
   a. Audiovisual Communication Review
   b. Review of Educational Research
   c. Encyclopedia of Educational Research
   d. Handbook of Research on Teaching.

3. The student will identify organizations and institutions that will research questions related to educational media and teaching. Those identified should include:
   a. Michigan-Ohio Regional Educational Laboratory
   b. Clearinghouse for Federal, Scientific and Technical Information
   c. Defense Documentation Center
   d. ERIC Center for Educational Media and Technology.

4. Given a specific instructional need in his field and a specified target population, the student will construct a bibliography of relevant research sources.

5. Given a specific instructional problem in his field and a specific use of media, the student will locate more than one set of published research results. The student will identify those variations that would account for the different results.

6. Given the assignment to determine the most effective use of mediated instruction for a specific instructional problem in his field, the student will select the form of mediated instruction most likely to accomplish his objective based on the existing results of relevant research.

7. Given a decision on the types of mediated instruction to be included in a system designed to meet specific instructional needs, the student will evaluate the appropriateness of the selected media, based on the results of the listed research studies.

8. Given an instructional need in a specified field for a specified target population, an existing instructional sequence, and a new instructional system proposed to more adequately meet the need, the student will:
   - a. use research results to evaluate the appropriateness of media to be included in the system
   - b. use research results to evaluate the validity of proposed student gain
   - c. make a decision on whether to implement the new system based on proposed student gain and cost.

9. Given a film that is a part of a system designed to meet an instructional need and a list of sources from which the system was designed, the student will evaluate the instructional system based on:
   - a. The appropriateness of media selected for the particular subject matter presented in the film
   - b. the appropriateness of media selected for the particular target population shown in the film
   - c. the effectiveness of the sequencing of the teaching techniques included in the total system.

10. Given a training need in a specified field for a specified target population and a new system being tested to evaluate its success in meeting that need, the student will use cost analysis data to evaluate the proposed revisions.

# MUSIC EDUCATION

Virginia Chambers

Roger Folstrom

## MUSIC EDUCATION

Abstract. As an art form music requires training and understanding through a variety of direct experiences which range from listening, to public performance. It is the objective of the WETEP Music Education Element to provide the student with the opportunity to gain knowledge, understanding, and feeling which will allow him to elect music in fulfilling his need for aesthetic expression and experience. This objective will be reached by examining the common music experience in the folkways of the American college student, by tracing the connection between these folkways and the functional uses of music in Western Culture and in other cultures, and by showing the relationship of functional to artistic music through direct experience in the making of music.

Students vary considerably in their appreciation of music and in their ability ot perform musically. It is anticipated that this variation will not be decreased as a result of participation in the WETEP music element. Rather, students will have a great variety of musical experiences among which they may choose as they develop competencies represented by the five Music Education subelements: Music Fundamentals, Responding to Music, Form in Music, Function of Music, and Teaching Music.

### General Objectives

1. To acquaint students with the fundamental building blocks of music.
2. To build favorable attitudes towards music through security gained from singing, playing and listening.
3. To provide experiences for the student to develop aural skills: melodic and rhythmic memory, discrimination in listening.
4. To provide experiences for the student to develop motor-skill competency in the use of music materials.
5. To provide music experiences which form the bases for on going development of music awareness and music taste.
6. To provide experiences in the teaching of music.

These objectives are achieved through instructional activities provided in the various subelements and modules of the WETEP Music Education Element. Students are expected to undertake some study in each of the various subelements although no minimum level of competence is required as students meet minimum requirements.

# MUSIC EDUCATION[1]

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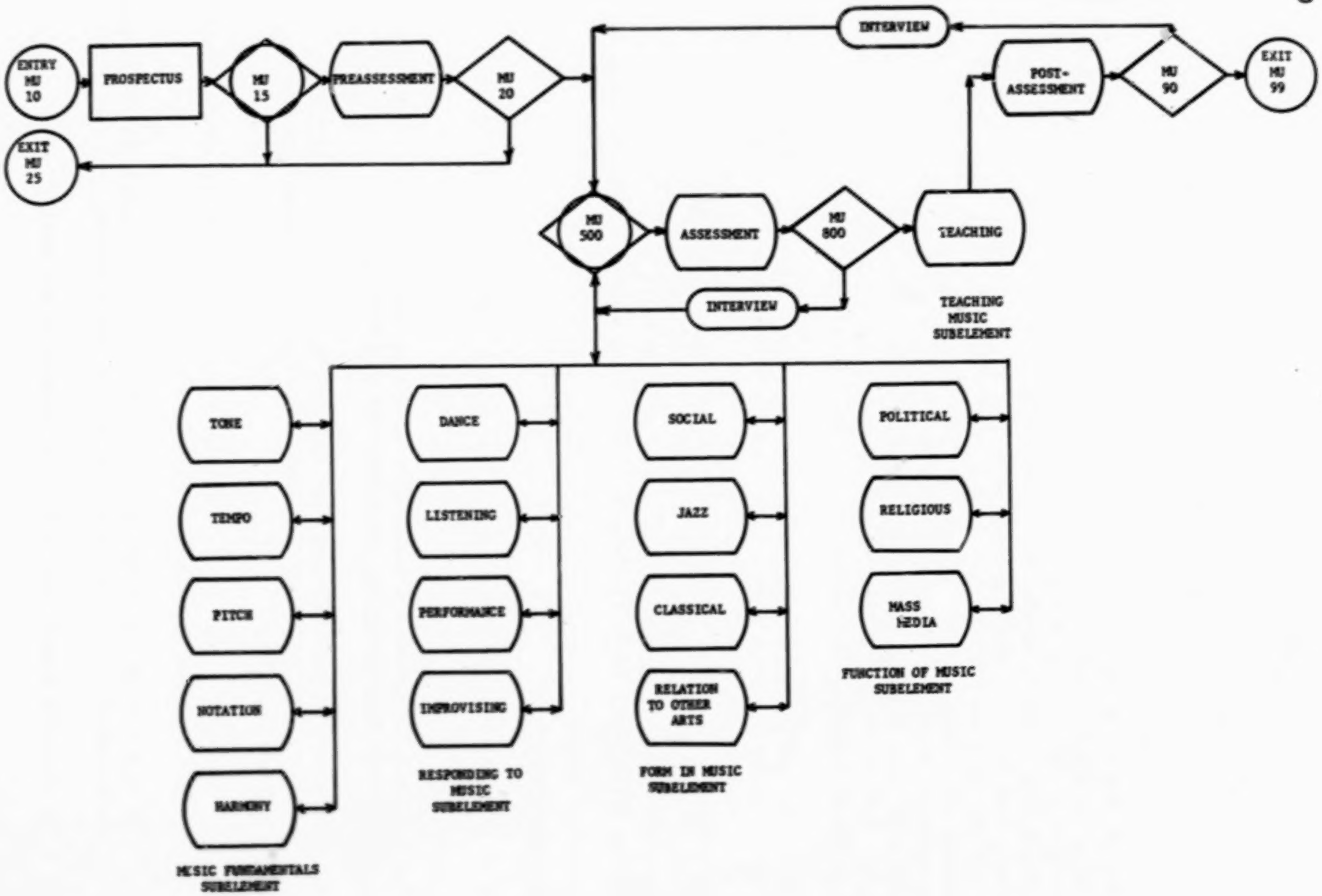
[1] The Music Element was adapted from Behavioral Science Elementary Teacher Education Program, East Lansing: Michigan State University, 1968.


ENTRY MU 10
PROSPECTUS
MU 15
PREASSESSMENT
MU 20
EXIT MU 25
INTERVIEW
POST-ASSESSMENT
MU 90
EXIT MU 99
MU 500
ASSESSMENT
MU 800
TEACHING
INTERVIEW
TEACHING MUSIC SUBELEMENT
TONE
TEMPO
PITCH
NOTATION
HARMONY
MUSIC FUNDAMENTALS SUBELEMENT
DANCE
LISTENING
PERFORMANCE
IMPROVISING
RESPONDING TO MUSIC SUBELEMENT
SOCIAL
JAZZ
CLASSICAL
RELATION TO OTHER ARTS
FORM IN MUSIC SUBELEMENT
POLITICAL
RELIGIOUS
MASS MEDIA
FUNCTION OF MUSIC SUBELEMENT

A MODEL OF THE MUSIC EDUCATION ELEMENT

These objectives are achieved through instructional activities provided in the various subelements and modules of the WETEP Music Education Element. Students are expected to undertake some study in each of the various subelements although no minimum level of competence is required as students meet minimum requirements. As the flowchart indicates, there is no required sequence among the elements with the exception that the Teaching Music subelement assumes some experience in each of the other subelements.

Subelement A: Music Fundamentals

1. Is able to verbally identify and demonstrate through motor activity variations in tone.
2. Can demonstrate variations in tone by activity with various tone producers.
3. Is able to physically respond to meter and rhythm and variations thereof and verbally describe felt changes in tempo.
4. Can demonstrate ability to arrange sound within time.
5. Understands the need for notational system.
6. Can identify rhythmic concepts and means of notation.
7. Is familiar with concepts of melody and the need for a system of precise pitch notation.
8. Can identify traditional patterns of tonal organization.
9. Is able to identify arrangements of tone in melody, intervals, repeated tones and scale steps.
10. Is able to identify harmonic progressions in music.

Subelement B: Responding to Music

1. Is able to demonstrate how the key elements of music support dance action.
2. Can identify accurately musical elements which lead to dance motion.
3. Can demonstrate understanding of musical creation by demonstrating the arrangement of tone in time and involvement in the creative process through improvisation.
4. Can become emotionally involved in music improvisation and creation.

5. Can perform and verbalize concepts of rhythm, meter, and tempo.
6. Can accurately read, play and sing representative melodies.
7. Can demonstrate an aural and kinesthetic understanding of harmony through singing and playing.
8. Can synthesize rhythm, melody and harmony through performance experience.
9. Can identify musical textures through listening.
10. Can synthesize listening experiences.

Subelement C: Form in Music

1. Is able to verbally describe music as a function in social interaction both historically and contemporarily.
2. Is able to demonstrate the musical elements that support the accomplishment of menial labor.
3. Can identify the presence of rhythm in human activity and the performance of rhythms appropriate to work action.
4. Can identify the musical similarities between the worksong of the Negro and the beginnings of jazz.
5. Is able to identify the musical elements and stylistic practice unique to jazz, to differentiate between jazz as dance music and jazz as an evolving art form.
6. Is able to identify binary and ternary in simple and complex music.
7. Can identify sonata form through structural elements.
8. Is able to identify elemental changes which bring about variations on a theme.
9. Can listen for specificity in music: Form, Themes, Thematic, Instrumental voices.
10. Can aurally discriminate form in music and verbally relate form as basis of organization in music to other arts.
11. Can aurally discriminate sections and themes of extended three-part form.
12. Is able to identify changing music elements and materials of 20th century music.

## Subelement D: Function of Music

1. Is able to identify how man has used music to arouse and engender attitudes to promote political and social change.

2. Can identify the dependency on text and/or media of religious music.

3. Is able to identify musical elements used by composers of background music for mass media.

4. Is able to verbalize the evolvement of music as an art to develop awareness of a need for a basis for listening.

## Subelement E: Teaching Music

The specific objectives for this subelement grow out of the relation between those identified in the earlier subelements and those specifically delineated in the WETEP Curriculum and Instruction Element. Laboratory and clinical experiences will include activities in which students work with students in helping them understand and appreciate music fundamentals, form and function through appropriate responses to music experience.

# EARLY CHILDHOOD EDUCATION

Helen Dawe, Co-chairman

David C. Davis, Co-chairman

Nancy Elson

## EARLY CHILDHOOD EDUCATION

Abstract. The Early Childhood Education Element of WETEP is built upon a structure of three subelements, each integrating knowledge of early childhood teaching procedures or programs with psychological principles or societal forces. The subelements contain the major objectives to be attained by WETEP students choosing to specialize in the education of children from 3 to 6 years in age.

The Introductory Module from each of the three Educational Psychology Subelements form the minimal prerequisites for entrance into the Instruction Subelement of the Early Childhood Element. Once entered into the Instructional Subelement, the WETEP student is offered various choices among alternatives in his advancement toward specialization. The subelement is made up of six modules which students enter, re-enter, or by-pass according to their need or desire or according to system assessments of their performance. Prescription and self-selection procedures are offered for the direction of each student to appropriate learning activities within the modular content: Planning Patterns, School Organization, School Relationships, Learning Environments, Assessment, and Home-School Relations.

The Curriculum Subelement is interrelated with the several methods elements, such as Communications, Science, and Health, but in the Early Childhood Element these topics will be specially developed in modules appropriate to the teaching of very young children. These include: Content, Materials and Equipment, and Processes. Within the Processes Module, a flow pattern for a unit on play has been prepared. Charting student flow among the major topics on the subject of play, this pattern serves as an illustration of the kinds of activities which might be built in to WETEP as the program continues to develop. Extensive use is made of live and videotaped observations of children playing; students are encouraged to shoot slides of their own illustrating types of play and play equipment, and to analyze them for their esthetic, psychomotor, intellectual, and humanizing values. Implementations of their planning, done with groups of children, are videotaped and later analyzed in seminar with an instructor.

The third of the subelements is the School Subelement, in which WETEP students analyze historical and theoretical positions on the education of the young child, compare and contrast various types of public and private programs, and synthesize the many issues and trends with regard to funding, staffing, and building for schooling of the very young.

# EARLY CHILDHOOD EDUCATION

The Early Childhood Education Element of WETEP parallels the Educational-Psychology Element in respect to organization by subelements and by the three dimensions of modular structure. It includes three subelements: Instruction, Curriculum, and School. Each of these is further divided into modules covering specific areas of subject-matter content appropriate for those students who choose to specialize in Early Childhood Education of children whose ages range from 3 - 6 years.

The Instruction subelement contains the modules treating the variety of teacher performances which are distinct from curriculum considerations. The Curriculum subelement includes all the content for the various subject matter areas appropriate for young children. The School subelement is designed to present the history, organization, and current trends of early childhood education.

The Early Childhood Education Element modules are focused exclusively on content relevant to teaching young children. The element serves to adapt the student's general education knowledge and psychological principles to the specific age level in relation to instruction, curriculum, and school content areas.

The general objectives of each of the subelements are shown in Table 1.

The subelements, Instruction, Curriculum, and School, are the three major subdivisions of the element. The Instruction Subelement contains modules based on initial study in Educational Psychology and in Curriculum and Instruction. The introductory module of each of the three Educational Psychology subelements is the minimal prerequisite to the Early Childhood Instruction subelement. The modules of the Curriculum subelement are interrelated with the several WETEP methods elements such as Communications, Science, and Health, but in the Early Childhood Element these topics will require special development in modules appropriate for children ages 3 - 6. The School subelement requires as prerequisites instruction from Educational Policy Studies.

Figure 1 illustrates the division of the Instruction subelement into modules which become the basis for specialized study. Choice among various alternatives within each of these modules will be offered for students who specialize in Early Childhood Education.

Figure 2 identifies the modules of the Curriculum subelement: Content, materials and equipment, and processes. The Content module provides substantive material for early childhood programs. Specializations within the Materials and Equipment module describe the properties and uses of each type of material or equipment. The Processes module is organized to describe the functions and characteristics of such processes as discovery, play, and expression.

Figure 3 shows the modules of the School subelement: historical influences in early childhood education, types of programs, and issues and trends.

## Illustrative Instructional Unit

What follows is a description of a feasible instructional unit designed to be illustrative of the kinds of activities which might be built in to each module as WETEP continues to be developed. The Play Unit has not been extensively developed in terms of the variety of student activity which can eventually be expected to be offered. It is meant as an illustration which, if carried further, would appear as a flow chart of student learning activities.

## TABLE 1

## OBJECTIVES FOR EARLY CHILDHOOD ELEMENT

SUBELEMENT I: Instruction

1. Students integrate knowledge of procedures and principles of instruction with psychological principles.

    Module

    1.1 Comprehend the role of planning and its interaction with curriculum.

    1.2 Account for the patterns of organization in early childhood programs.

    1.3 Interpret pupil and teacher behavior in regard to the qualities, goals, and functions of specified relationships.

    1.4 Account for the effects of selection, storage, maintenance and arrangement of equipment in respect to the total classroom.

    1.5 Distinguish the characteristics of assessment instruments and techniques employed at the early childhood level.

    1.6 Comprehend the purposes and procedures appropriate for establishing and maintaining constructive home-school relations.

SUBELEMENT II: Curriculum

2. Students integrate knowledge of curriculum with psychological principles.

    Module

    2.1 Describe appropriate content in each subject area for early childhood programs.

    2.2 Distinguish characteristics of each type of material and equipment in early childhood programs.

    2.3 Comprehend the relationship between processes and curriculum.

SUBELEMENT III: School

3. Students integrate knowledge of early childhood programs with other societal forces and institutions.

    Module

    3.1 Account for the important factors of historical influence on early childhood education.

    3.2 Describe the distinguishing characteristics of various types of programs for the young child.

    3.3 Account for the influences of current issues and trends on early childhood education.

MODULAR CONTENT

| GENERAL 1 | 2 | SPECIALIZED 3 |
|---|---|---|
| Planning | Structure | Analysis of Planning Patterns |
| | Balance | |
| | Units | |
| Organization | Grouping | Contrasting Organizational Patterns |
| | Staff | |
| | Schedules | |
| | Orientation | |
| School Relationships | Teacher-Child | Points of Conflict |
| | Child-Child | |
| | Teacher-Child-Materials | |
| | Teacher-Teacher | |
| Learning Environments | Selection | Factor Analysis of Environment |
| | Maintenance | |
| | Storage Arrangements | |
| Assessment | Anecdotal Records | Instrument Construction |
| | Conferences | |
| | Observing | |
| Home-School Relations | Types of Contacts | Special Competencies |
| | Content of Contacts | |

Instruction Subelement

FIGURE 1

| | | GENERAL 1 | 2 | SPECIALIZED 3 |
|---|---|---|---|---|
| MODULAR CONTENT | Content | Science | Variations in Children's Responses to Content and Variations in Content | Specialized Competencies in Subject Matter Area |
| | | Music | | |
| | | Art | | |
| | | Social Studies | | Adaptations of Subject Matter for Remediation Programs |
| | | Mathematics | | |
| | | Communication | | |
| | | Physical Education | | |
| | Materials and Equipment | Construction | Variations of Material and Equipment | Specialized Competencies in Design, Construction, Selection, and Evaluation of Materials and Equipment |
| | | Art | | |
| | | Dramatic Play | | |
| | | Manipulative | Adaptation of Materials and Equipment to Children with Special Needs | |
| | | Science | | |
| | | Music | | |
| | | Literature | Building Extensive Collections of Materials | |
| | | Physical-Motor | | |
| | | Games | | |
| | | Water-Sand | | |
| | Processes | Scientific Discovery | Developmental Sequences in These Processes | Specialized Study of the Use of Curriculum in Process |
| | | Play | | |
| | | Information Gathering | | |
| | | Expression | | |

Curriculum Subelement

FIGURE 2

| | GENERAL<br>1 | 2 | SPECIALIZED<br>3 |
|---|---|---|---|
| MODULAR CONTENT | Historical Influences | Philosophical and Theoretical Influences | Detailed Analysis |
| | | Research Influences | |
| | | Socio-Economic Influences | |
| | Types of Programs | Laboratory School | Compare and Contrast |
| | | Day Care | |
| | | Private | |
| | | Church | |
| | | Public School | |
| | | Research | |
| | | Cooperative | |
| | | Special | |
| | | Seasonal | |
| | | Commercial | |
| | Issues and Trends | Funding | Synthesis of Each to the Other |
| | | Federal Programs | |
| | | Current Curriculum | |
| | | Approaches | |
| | | Assessment | |
| | | Programs | |
| | | Long-Range Effects | |
| | | Staffing | |

School Subelement

FIGURE 3

Curriculum Subelement

Processes Module

Play Unit

(1) Enter.

(2) Prospectus. Preview of the nature of the module and the objectives for the instructional unit. Examination of the prerequisites.

Student decision point.
2.1 Exit, or
2.2 Take pre-assessment.
Forced decision point.
2.3 Exit, or
2.4 Go to Topic 1 (3)

Objective: Be able to explain different theories of play.
Representative theories:
- use of surplus energy
- preparation for later life
- recapitulation of the cultural periods of the race
- self expression
- absorbing pre-occupation experience

(3) View filmed lessons of children at play. Analyze the nature of the play taking place.

(4) Read and contrast various play theories.

(5) List synonymous terms for various theories and explanations of play.

(6) Discuss viewings and readings in seminar with instructor.

(7) Conference with instructor in (6).

Decision point.
7.1 Exit, or
7.2 Go on to Topic 2 (8)

Objective: Be able to identify and differentiate among types of play.
Representative types:
- random play--reaction to circumstances
- imitative play--child as actor
- imaginative play--world of make-believe
- reflective play--alone

(8) View films of children at play. Analyze types of play taking place.

(9) View selected play equipment slides; determine the type of play which might take place with given equipment.

(10) Observe live children at play. Analyze types of play taking place.

(11) Photograph prints or slides showing various examples of types of play.

(12) Discuss observations (8 through 11) in seminar, with instructor.

(13) Create play problem episodes to determine what kind of child behavior one could expect to find in given situations.

(14) Role-play various types of play in seminar with instructor.

(15) Conference with instructor (14)

Decision point.
15.1 Exit, or
15.2 Go on to Topic 3 (16)

Objective: Be able to demonstrate an understanding of the prerequisites of play.

- time for play
- a place to play
- opportunity to mingle with and imitate playmates.

(16) View films demonstrating the prerequisites for play.

(17) Observe live children at play, analyzing the degree to which the prerequisites for play are filled

(18) Discuss viewing and observations in seminar with instructor.

(19) Conference with instructor (18)

Decisionpoint.
19.1 Exit, or
19.2 Go on to Topic 4 (20)

General Objective: Be able to select or construct physical play equipment and arrange it for indoor and outdoor play areas.

Criterion Behaviors:

- provide equipment for the development of overall muscular fitness: lifting, carrying, balancing, jumping
- provide for the development of motor skills: the operation of mechanical equipment
- choose equipment which is within the child's motor capacities
- provide three or four levels of physical achievement
- choose equipment which is well-made and will take long and hard ware
- provide equipment which stimulates self-activity

(20) View films illustrating any of the above behaviors.

(21) Discuss in seminar the aesthetics of play equipment.

(22) Observe children in physical play, indoors and outdoors.

(23) Discuss in seminar environmental factors: indoors/outdoors, large room/small room.

(24) Plan and choose equipment for physical activities involving the grosser physical movements, indoors and outdoors.

(25) Plan and choose equipment for physical activities involving motor skills.

(26) Construct simple equipment necessary for the carrying out of (24) and (25).

(27) Design and submit to local and national contests plans for toys and play equipment (optional).

(28) Construct a plan which illustrates physical tasks on various levels.

(29) Have videotaped an implementation of (24), (25), (26), (28) with a group of pupils.

(30) Discuss (24), (25), (26), (28), (29) and implications in seminar with instructor.

(31) Conference with instructor in (30).

Decision point.
31.1 Exit, or
31.2 Follow suggestions for strengthening (24) through (29) with a different group of pupils, or
31.3 Go on to Topic 5 (32)
General Objective: Be able to select and provide intellectual play activities for children.
Criterion Behaviors:
- provide activities which will reinforce the content of the curriculum: rote number, language, and letter learning
- provide activities which will foster the development of literary and artistic appreciation
- provide activities on several levels of intellectual achievement
- provide some games involving chance, offering all pupils some opportunity to win
- provide child-sized or miniature set-ups which challenge the imagination of the child
- provide definite goals to end games
- select some activities for solitary, reflective play
- select some materials which demonstrate the historical progression of play equipment

(32) View films illustrating any of the above behaviors.

(33) Observe children in intellectual play.

(34) Construct or select games or play materials which reinforce the content of the curriculum. (Consult catalogs in the making of selections)

(35) Plan or construct games or play materials which foster literary or artistic appreciation in the very young child.

(36) Design and submit to local and national contests plans for toys and play equipment (optional).

(37) Construct a plan which illustrates intellectual tasks on several levels.

(38) Construct or select play materials which stimulate individual intellectual play activity (laboratory experience).

(39) Construct or select child-sized or miniature play materials which offer scope to a child's imagination (laboratory experience).

(40) Analyze a school's play equipment collection with regard to its acknowledgement of social issues, i.e., minority group dolls, roles for both sexes.

(41) Have videotaped implementations of any of the activities (34) through (39) carried out (laboratory experience, or clinical experience with pupils).

(42) Discuss (34) through (41) and implications in seminar with instructor.

(43) Conference with instructor (42)

Decision point.
43.1 Exit, or
43.2 Follow suggestions for strengthening (34) through (41) with another group of pupils
43.3 Go on to Topic 6 (44)
    General Objective: Be able to combine various play activities into appropriate curricular programs for pupils.
    Criterion Behaviors:
        - analyze the play activity
        - analyze each pupil
        - analyze available equipment
        - analyze teacher's own capacities

(44) Construct plans synthesizing knowledge of pupil abilities and play activities.

(45) Have videotaped implementations with pupils of the planned curricular programs.

(46) Review taped case studies (45) to see growth progression of pupils and teacher.

(47) Discuss (44) through (46) and implications in seminar with instructor

(48) Conference with instructor (47)

Decision point.
48.1 Exit: objectives attained, or
48.2 Loop back to (8), (20), (32), or (44) and repeat with different groups of pupils.

# CULTURALLY DIVERSE

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## CULTURALLY DIVERSE

Abstract. The Culturally Diverse Element has been developed in an effort to help the WETEP teacher to identify, understand, and appreciate societal, cultural, physiological, and psychological factors which influence educational deprivation. Understanding of the factors responsible for academic failure in schools with a high concentration of children who differ greatly from their middle class peers is an important characteristic of the WETEP teacher. His appreciation of these factors will help him to develop a sensitivity toward the setting and problems of the culturally diverse learner, and to obtain a comprehensive coverage of the social issues involved in teaching the culturally diverse child.

All WETEP teachers assume a basic responsibility to help every pupil to become aware of the basic problems and issues which our society faces and to become appropriately committed to contribute to the elimination of these problems. Because of this major commitment, all WETEP teachers will experience some study in the culturally diverse element.

Three subelements have been defined: 1) Societal and Cultural Influences; 2) Physiological and Psychological Influences; and 3) Learning Influences. The content of the three subelements is contained in modules designed in a continuum from general to specialized study. Some students, it is assumed, will choose the problems of the culturally diverse as their area of specialization.

A student of the problems of the American Indian, for example, will make an intensive study of the societal influences bearing upon this group. More specifically, he should understand the diversity of their social institutions and, on a specialized level, might choose to concentrate on a knowledge of inter-tribal affairs or of organizations on the reservation. Similarly, within the second subelement, Physiological and Psychological Influences, a student might study the physical-motor domain, concentrating or specializing on the role of the dance in the learning process of culturally diverse peoples.

Laboratory and clinical experiences will be a vital and extensive part of the Learning Influences subelement in the Culturally Diverse Element. Perhaps the most significant single experience in the Element is the ecological experience which takes place in the basic environment of a culturally diverse child. During this phase, WETEP students specializing in the Culturally Diverse spend one week living in the home of an Indian, Afro-American, or white family while concentrating on a study of human ecology. Following this ecological experience, students spend a semester working in that same community in an elementary school.

## CULTURALLY DIVERSE

> By all known criteria, the majority of urban and rural slum schools are failures. In neighborhood after neighborhood across the country, more than half of each age group fails to complete high school, and five per cent or fewer go on to some form of higher education. In many schools the average measured I. Q. is under 85, and it drops steadily as the children grow older. Adolescents depart from these schools ill prepared to lead a satisfying, useful life or to participate successfully in the community.[1]

Wisconsin and the nation are beset with problems associated with the education of Indians, Afro-Americans, and other culturally diverse populations resulting from economic and educational impoverishment. The Culturally Diverse element has been developed in an effort to help the WETEP teacher identify, understand and appreciate societal, cultural, physiological, and psychological factors which influence educational deprivation. These factors are responsible for academic failure in schools with a high concentration of children who differ greatly from their middle class peers. Understanding of these factors will enable the WETEP teacher to obtain a comprehensive coverage of the social issues involved in teaching the culturally diverse child, obtain information about the psychological and physiological influences on the culturally diverse child, and to help the WETEP teacher know and develop a sensitivity--through both vicarious and direct experiences--toward the setting and problems of the culturally diverse learner.

The prospective WETEP teacher--through interaction with members of the professional staff of the university, the school, and the culturally diverse community, as well as his classmates--is provided an opportunity to study in depth the poverty, prejudice, discrimination, and debasement which besiege culturally diverse pupils.

Through the discussion of the relevant issues pertinent to the learner, the WETEP teacher is provided an excellent opportunity to procure a comprehensive profile of the culturally diverse pupil and therefore meet his individual needs, interests, and ability levels. Acquisition of information of this nature is essential to the development of any relevant classroom activity.

Social mobility is characteristic of our culture. Eighty per cent of the United States population new resides in large metropolitan areas where the numbers of culturally diverse children are increasing. Ranking high among the many forms of educational deprivation are children who are handicapped by living, working, and playing only with persons of their own racial, ethnic, and religious group. Unless classroom activities are fortified by extended energies directed at this basic problem, the pupils will be forced to rely on stereotyped ideas, often dangerous and distorted, about people from diverse backgrounds. If we are going to free each student to become the best that is in him to become, our efforts--educational, social, and psychological--must sensitize each participant in the WETEP program to the uniqueness of the culturally diverse.

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[1] E. W. Gordon and D. A. Wilkerson, Compensatory Education for the Disadvantaged, C.E.E.B., New York, 1966, p. 1.

The Culturally Diverse Element of WETEP parallels the Educational-Psychology Element in respect to organization of sub-elements and by the three dimensions of modular structure and depends heavily on the content of that element. The Culturally Diverse Element includes three subelements: 1) societal and cultural influences, 2) psychological and physiological influences, and 3) learning, which is comprised of clinical and laboratory experiences and includes curriculum and instruction. The subelement objectives are located below. Objectives for teachers of culturally diverse are included in Table 1.

The preparation of the WETEP teacher of the culturally diverse parallels to a large extent the preparation of other teachers. The central emphasis in this element is on our concern for the Affective Domain as it relates to the preparation of teachers to work with culturally diverse learners.

Problems in our society associated with the education of children from culturally diverse backgrounds are not confined to those schools in which we find predominant numbers of these children. All WETEP teachers assume a basic responsibility to help every pupil to become aware of the basic problems and issues which our society faces and to become appropriately committed to contribute to the elimination of these problems. Because of this major commitment, all WETEP teachers will experience some study in the Culturally Diverse Element and will achieve an understanding which approximates the awareness levels of the objectives as identified.

Subelements of the Culturally Diverse Element:

| | | |
|---|---|---|
| 1. | Societal and Cultural Influences | Identifies cultural and societal factors which influence educational deprivation |
| 2. | Psychological and Physiological Influences | Accounts for child psychological and physiological development in an instructional program |
| 3. | Curriculum and Instruction | Adapts cultural and societal factors learned through clinical and laboratory experiences toward appropriate implementation of instructional approaches and curriculum development |

## TABLE 1

## OBJECTIVES FOR TEACHERS OF CULTURALLY DIVERSE

1. The WETEP teacher should be able to identify cultural and societal factors which influence educational deprivation.

   1.01 Is aware of racial biases and prejudices.

   1.02 Is aware of the nature of poverty.

   1.03 Is aware of different work concepts.

   1.04 Is willing to respond to the cultural background of the child.

   1.05 Is willing to respond to the limited experiential background of the child.

   1.06 Is willing to respond to practices of local, state, and national social and cultural agencies.

   1.07 Respond to customs, traditions and mores.

   1.08 Respond to different perceptions of time.

   1.09 Accept various value systems.

   1.10 Is committed to understanding moral, ethnical and racial relations.

2. The WETEP teacher should be able to account for child psychological and physiological development in an instructional program.

   2.01 Is aware of the relationsof teacher expectations to the performance of the culturally diverse child in classroom activities.

   2.02 Is aware of different attitudes and feelings and how they affect the development of the self concept.

   2.03 Is aware of the influence of physiological problems to the teaching-learning situation.

   2.04 Is aware of how prejudices are formed.

   2.05 Is willing to respond to the need for immediate gratification.

   2.06 Is willing to accept behavior patterns common to children from low socio-economic backgrounds.

   2.07 Is willing to accept value systems which facilitate the development of self-esteem.

2.08 Is committed to raising the aspirational levels of the culturally diverse child.

3. The WETEP teacher should be able to adapt cultural and societal factors learned through clinical and laboratory experiences for curriculum and instructional development.

3.01 Is aware of economic and environmental factors affecting the child and learning patterns.

3.02 Is aware of private and public compensatory programs.

3.03 Is aware of cultural factors affecting perceptual styles.

3.04 Is willing to respond to different analytical approaches to learning.

3.05 Is willing to respond to cultural heritages.

3.06 Is willing to relate to the needs, interests, and desires of the culturally diverse child in developing instructional activities and curriculum organization.

3.07 Is willing to use literature pertaining to the background of the culturally diverse child.

3.08 Is willing to accept varied academic and physical deficiencies.

3.09 Is willing to develop an inquiring attitude.

3.10 Is willing to develop techniques for controlling aggression in culturally acceptable patterns.

3.11 Respond to human ecology in the basic environment of the culturally diverse child.

3.12 Respond to research on experiential backgrounds of the culturally diverse child.

3.13 Is committed to assessing the child's performance through different methods of evaluation.

3.14 Is committed to forming rational judgments as to the culturally diverse child's classroom achievement or underachievement.

3.15 Is committed to assessing people of various races, cultures, national origins, and occupations in terms of their behaviors as individuals.

## Program for Teachers of Culturally Diverse

The program for the teacher of the culturally diverse element consists of three basic subelements:

(1) Societal and cultural influence
(2) Psychological and physiological influences
(3) Learning influences

## Program Development

### Subelement 1: Societal and Cultural Influences

The content of the first subelement is shown in Figure 1. The content identified in the left column represents basic information which will be obtained by many students through introductory courses in sociology and anthropology as a part of their general education. Much of the content represented in the middle column is also available in courses in the College of Letters and Science. The interest of students specializing in this element is focused either on the education of Indians, Afro-Americans, or whites. Attention is given to specific problems relating to the various topics in the middle column and extended into the right column. In the right column each topic is developed so that a student may become familiar with it in relation to his special interest whether that be Indian, Afro-American, white or the education of all groups. Thus, as a part of general education or areas of specialization, course work and instructional modules are organized or planned to include, for instance, the study of social units and life styles of those who are culturally diverse. The role of the peer group as it influences behavior differs from one societal context to another and thus special attention must be given the matter of competition and cooperation in the education of Indians and in the education of the Afro-Americans. The manner in which school programs have been implemented to meet the needs of these two minority groups has differed and students will become familiar with the progress of program development pertinent to their particular interests. The role of black power groups or of the inter-tribal council will need to be understood by the WETEP teacher who would effectively work in schools with members of these minority groups.

To understand the cultural influences of Indian life and education, the WETEP teacher will study the problem of poverty and relation to life on the reservation, he will become familiar with the legends and the myths of the Indian culture and will examine the role of texts and other books in the school in the education of Indian students. The music, dance and art of the Indians as well as other customs and traditions will be familiar to the WETEP teacher whose specialization is the education of Indian youth.

These are but a few of the specific examples of the topics which need to be understood by the WETEP teacher whose area of specialization is with the culturally diverse. For many of these topics, course

General ⟶ Specialized

| | 1 | 2 | 3 |
|---|---|---|---|
| Modular Content | Societal Influences | Family | Social units<br>Life styles<br>Matriarchial<br>Extended family |
| | | Peer | Competition<br>Cooperation<br>Isolation<br>Acceptance |
| | | School | Compensatory Programs<br>Community Action<br>Health, Education, Welfare<br>Tutorial |
| | | Social Institutions | Religious<br>Government Welfare<br>Community Organizations<br>Black Power<br>Inter-tribal Council |
| | | Secular Trends | Economic Forces<br>Changing Mores |
| | Cultural Influences | Poverty | Economic and Social Conditions<br>Reservation<br>Ghetto<br>Slums |
| | | Cultural Groups | Rural<br>Urban<br>Special areas |
| | | Literature | Legends<br>Myths<br>Textbook selections |
| | | Heritage | Music<br>Dance<br>Art |
| | | Historical | Customs<br>Traditions<br>Past/Present |
| | | Political Pressure Groups | Human rights<br>Civil rights<br>Protests/Demonstrations |

Societal and Cultural Influences Subelement--Figure 1 work in the College of Letters and Science will be useful. For others, a variety of instructional modules which utilize various instructional activities will be developed. Dozens of courses appropriate to the topic of this subelement are available throughout the campus. A few examples are included here for illustrative purposes.

RACE AND ETHNIC RELATIONS*

Examination of institutional, ecological, demographic, and social psychological aspects of race and ethnic relations in the United States and elsewhere; historical as well as contemporary coverage.

LIVING RACES OF MANKIND

Distribution, history, and origins of living races and the processes of race formation.

MULTI-RACIAL SOCIETIES IN THE AMERICAS

A social history of the Indians and Negroes in the New World studied comparatively. An analysis and comparison of selected Indian and Negro communities with special attention to wide ranged of options they had in adjusting to European culture contacts. Emphasis on Portuguese and Spanish America, 1492-1808.

POVERTY AND SOCIAL WELFARE

The individual and social consequences of poverty. The nature and dimensions of poverty in the United States. Historic and contemporary approaches to the problems of poverty. Poverty and social welfare policy and programs.

SOCIAL STRATIFICATION

Occupation, class, and status, as determinants of group interests, ideologies, and struggles; selected international comparisons.

THE CULTURES OF AFRO-AMERICA

Comparative study of those parts of the New World where peoples of African descent have provided a majority or minority of the population, such as the British, French, Spanish and Dutch Carribbean and Brazil. Topics will include: persistence of African culture elements slavery, the plantation system, agricultural peasant communities, problems of household and family organization, and concepts of race class.

EMPLOYMENT PROBLEMS OF THE DISADVANTAGED

Providing for work in an anti-poverty agency during the summer. Multi-disciplinary content, including the economic analysis of the labor market and poverty, the sociology of employment and minority problems, education theory relating to the disadvantaged, psychology of work, legal aspects of minority employment, and socio-economic analysis of urban problems.

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*Course descriptions are from University of Wisconsin course catalogs.

RACE AND LAW
Focuses on the areas of education, employment and housing. Purposes are to provide a brief legal history of developments in each area, the scope of present-day legal rights, and a description of the enforcement institutions--local, state and federal--responsible for administering existing law.

### Subelement 2: Physiological and Psychological Influences

The content of the second subelement is shown in Figure 2. Three modules of this subelement include learning, personality processes, and personality dimensions. Basic information related to psychological theories of learning and development which have direct relation to the content of this subelement is included in the EDUCATIONAL-PSYCHOLOGY element. Much of the foundation work related to middle column content will also be general psychological information appropriate for all WETEP students. Within that middle column and extending into the right column, however, is content directly concerned with the target population of the CULTURALLY DIVERSE element. In the module concerned with learning, for example, knowledge of cognitive learning characteristics of Indians, of Afro-Americans, and of whites is represented in the right column as focusing on subject matter content learning within culturally diverse populations. The study of physical-motor characteristics of Indians through an understanding of their dance, music, and art is a concern of this module.

Personality processes and personality dimensions constitute the other two modules of this subelement. Specific personality characteristics of different cultural groups need to be understood by the WETEP teacher who would be effective in his work with either the Indian or the Afro-American. Self-esteem, sex identification, aspiration and creativity are all aspects of personality process which will be given specific study by the WETEP student who specializes in the CULTURALLY DIVERSE element.

Examples of courses from various departments of the university which provide useful adjuncts to the instrucional modules prepared for this subelement include the following:

CURRICULUM AND INSTRUCTION IN THE ELEMENTARY SCHOOL
Teaching of social studies, including social issues and problems of minority groups and disadvantaged people.

TEACHING OF HISTORY AND OTHER SOCIAL SCIENCES
Including dealing with controversy and problems of minorities.

ISSUES IN URBAN EDUCATION
An examination of urban education and its relationship to developing political, social, and economic factors.

MASS COMMUNICATIONS AND SOCIETY
Relationships between mass communications and society; analysis and evaluation of media performance and of suggestions for change.

General → Specialized

| | 1 | 2 | 3 |
|---|---|---|---|
| Modular Content | Learning | Cognitive | Communications<br>Mathematics<br>Social Studies<br>Science |
| | | Physical-motor | Dance<br>Music<br>Art |
| | | Affective | Attitudes<br>Needs<br>Value system |
| | Personality Processes | Self-concept | Self-esteem<br>Egoism<br>Inferiority |
| | | Identification | Sex<br>Positive-negative |
| | | Aspiration | Expectations - self and others<br>Interests |
| | | Self-expression | Creativity<br>Language<br>Behavior Patterns |
| | Personality Dimensions | Direction | Self<br>Other<br>Motivations |
| | | Adjustment | Group<br>Individual<br>Feeling of security |
| | | Inter-intra personal relationships | Peer - gangs<br>Adult - authority |
| | | Race relations | Prejudice<br>Integration<br>Racism<br>Alienation |
| | | Aggression-dependency | Situational dependency to independence |

Physiological and Psychological Influences Subelement--Figure 2

Subelement 3: Curriculum and Instruction

Laboratory and clinical experiences will be a vital and extensive part of the various modules included in CULTURALLY DIVERSE element. To read about the Indian, his culture and his education is inadequate as the only source or even the most important source of the student's information about the characteristics and needs of Indian culture and education. It is even less adequate as a vehicle to provide the necessary catalyst to provoke the essential change in attitudes which is so much needed if WETEP teachers are to become committed to the improvement of educational programs and activities for the culturally diverse. This is no less so in the case of the culture and education of the Afro-American. Thus, laboratory and field experiences of considerable variety are built into the instructional modules of this element (Figure 3). Perhaps the most significant single experience which is a part of this element is the study of human ecology in the basic environment of the child. During this study of human ecology students spend one week living in the home of an Indian, Afro-American, or white family as a part of their study of human ecology in the basic environment of the child. Following this ecological experience, the students spend a semester working in that same community in an elementary school. The major questions of study throughout this clinical experience center around living conditions, family, community, work, and school. The specific questions which direct the efforts of students in this laboratory/clinical experience within each of these areas follow.

LIVING CONDITIONS

1. What kind of dwelling does the family of the student(s) live in? Is this typical of the community in general? Do most members of the community live in houses or apartments?

2. Does the family own or rent their dwelling? What about the other families?

3. How many rooms does the dwelling contain? How many bathrooms? What is the ratio of people per bedroom? Does the child share a room with others, and if so, how many?

4. What kitchen appliances does the home have? Is this about what other homes in the community have? Is there a television? a radio? a record player? Does the mother have a place to do laundry in easy distance?

5. Is the home new or old? Is it run-down or well cared for? Is there any space outdoors for children to play, such as a yard or a nearby park?

6. Are there any books in the home? What kinds, and how many? Are there magazines? Newspapers? Does the family have a library card? If so, do they use the library often?

- OBSERVATION
  - Video-taped episodes
  - Visitation
    - Schools
    - Reservations
    - Ghettos
    - Migrant worker camps
    - Economically depressed rural areas
- LABORATORY
  - Micro-teaching
  - Interviews
  - Field trips
  - Individual tutoring
- ECOLOGICAL STUDY
  - Living with family
  - Attending community functions
  - Study of community structure
  - Language patterns
  - Intellectual activities
- CLINICAL EXPERIENCE
  - Internship
    - Group instruction
    - Tutorial
    - School-community relations
    - Parent-school contacts

Curriculum and Instruction Subelement--Figure 3

7. Does the family have a car? Do you feel that a car is necessary in their situation? What kind of car do they have?

8. What are some of the typical meals served in the home? How far must the mother go to shop for food? Compare the food prices to those you are accustomed to: are they higher or lower?

## FAMILY

1. What is the size of the family of your students? Are both parents living with the family? If not, why not? What are the ages of the children in the family? Does this family seem like most of the others in the community?

2. Do any adults beside the parents live in the home? Are they relatives or others? Are there any paying boarders?

3. Are there other relatives of the family in the community? (grandparents, aunts, uncles, cousins, etc.) Is there a feeling of closeness between the various sections of the family? Is there frequent communication between relatives?

4. Has the family always lived in this community? If so, have they lived in the same dwelling they live in now? Where else in the community have they lived, and what led to the changes?

5. If the family has not always lived in the same community, where else have they lived? Why did they move? Do they seem to be happier living where they are now or not? Does this family's pattern of mobility seem to be similar to that of the rest of the community?

## COMMUNITY

1. How large is the community you are in?

2. Is the community part of a larger town or city, or is it a separate entity? Is it rural or urban?

3. What people in the community are treated with the most respect? Is respect based on material possessions, type of work, role in community affairs, or what?

4. What role does the family of your student play in the community? How does this affect the children?

5. What people in the community are most powerful in controlling the affairs of the community? Remember that such people may not exert power in an overt way, ie., elective offices or heads of organizations.

6. What types of organizations exist in the community on an active basis? For example, church groups, civil rights groups, recreational groups, political organizations, etc. Do the members of the families of your students belong to any of these groups? What is the feeling of the families toward such groups?

7. If people in the community have a problem, where would they be more likely to go? To a minister, a social worker, a school person, a relative, etc.

8. Most communities contain people who fill certain jobs, such as policemen, teachers social workers, ministers, a school board, and so forth. But such people have differing status and differing degrees of influences in each community. Try to assess the roles some of these figures have in your community.

9. How does the community seem to feel about the majority white culture? Do they feel cut off, resentful, or uninterested in the mass society?

## WORK

1. Which members of the family work? If both parents work, what provisions are made for the children?

2. What kind of work does the father do? The mother? Is this similar to what other members of the community do? What seems to be the most generally held kinds of jobs? Would you class them as unskilled, semi-skilled, skilled, white collar, or professional?

3. What is the level of unemployment in the community? Do people have trouble getting jobs? Has the family ever collected unemployment compensation?

4. Do most people work at jobs in the community itself, or do they travel elsewhere to work?

5. What aspects of work seem to be the most important to the working members of the family? Money? Status? Type of work?

6. Do people seem to change jobs often, or do they tend to remain in the same job for a long time? When they change jobs, do they find jobs similar to what they had before, or do they tend to increase their pay or their position?

7. How do people seem to find jobs? Do they use employment agencies? Newspaper ads? Or do friends mention openings?

8. Do you feel that many people in the community are underemployed? In other words, do they have jobs which do not make the best use of the abilities they have?

## CHILDREN'S ATTITUDES ABOUT WORK

1. What attitudes about work are expressed in the home? Does the child have a clear idea of what kind of work his parent or parents do? Has he ever visited the place of work?

2. Does the child express any ideas about what kind of work he would like to do? How do the parents regard the job-potential of the child? Do the parents seem to want the child to prepare himself for any particular kind of work, or do they seem unconcerned about this part of the child's future?

3. Would the parents like to see the child have a job with more money and status than their jobs? Do they overtly discuss this with the child? If there are older brothers and sisters in the family, what kinds of work do they do, and what effect does this have on the possible attitudes about work the child might have?

4. Do the parents relate going to school with getting a better job? Is this discussed with the child?

## SCHOOL

1. What is the level of schooling of the adults in the homes of your children? Is this similar to that of others in the community?

2. It has been said that some minority group parents are for education but against schools. Does this seem to be the case in the home and the community?

3. Some parents seem to feel that "What was good enough for me is good enough for my kids", while others want their children to have more education than they had. Which attitude seems to prevail in the community?

4. Do parents feel that the schools are doing a good job? If the children are.having trouble in school, what do the parents do about it? How do minority group parents feel about segregation in the schools (if any)?

5. Do the parents see the importance of school as that of getting a better job, or of learning for the sake of learning, or both?

6. What kinds of things do the parents convey to the children when school is discussed? Is there a conflict about school in the home? Do the parents help children with their homework? Do they give the children some place to do homework which is relatively quiet and secluded?

7. Do the parents participate in school functions, such as the PTA? What about the rest of the community? Do the parents feel comfortable about going to the school to talk to the teachers or the principal, or do they associate such visits with strictly unpleasant situations?

8. What kinds of changes would the parents make in the schools? How do the parents relate what the children are doing in school to what they would like the children to be able to do in the world of work?

## CHILDREN'S ATTITUDES ABOUT SCHOOL

1. How do the children feel about going to school? Would they go even if they didn't have to, or do they see it as an unavoidable necessity?

2. What subjects do they like best? Why do they seem to feel this way? Do they feel as smart as the other children in their classes, smarter, or less smart?

3. How do they feel about their teachers? The Principal? Do they think of teachers as strict, angry, easy-going, or what?

4. What do they feel they are learning in school? Do they seem to see any reasons for learning what they are learning, that relate to their later life or their life outside of the school?

5. If the child has any plans for what kind of work he would like to do, does he relate these ideas to what he does in school?

6. What interests or hobbies does the child have? Could the school help him with these, or use them to relate to his school work?

7. What does the child dislike about school? How do most of his friends feel about school?

8. What do you see as the major problems this child will have in the summer program? What will be his major assets? What kinds of things could be used to increase his interest in school and school subjects? (for example, does he have any specific interests in sports, hobbies, activities?)

The instructional focus during much of the laboratory/clinical experience will be consistent with the objectives as established in other instructional elements within WETEP. The teacher of the culturally diverse will be expected to demonstrate proficiency in the teaching of communications, mathematics, social studies, etc. But these efforts will be implemented in a learning environment for the WETEP student which emphasizes the role of the affective domain which is dependent upon the great variety of factors operating in the total basic environment of the child.

# SPECIAL EDUCATION

**James F. Billingsley, Chairman**

**Harold Schmidt**

# SPECIAL EDUCATION

Abstract. The instructional task for children with severe learning problems is most complex. The Special Education Element is concerned with the development of knowledge, skills, and attitudes which will enable the WETEP teacher to work more effectively with children with these learning disabilities. The element will provide background for all pre-service and in-service teachers, but is more specifically designed for students whose prime responsibility is or will be the education of children with marked developmental deficits in the cognitive, social, communication, or mobility areas.

The Special Education Element is based upon the development of logical, sequential, evaluative, individualized, multi-dimensional, and multi-media programs. It has a unique complexity due to the necessary integration and coordination with other WETEP elements. In it are examined basic theories and descriptions of normal and abnormal developmental patterns and factors affecting the learning of children, gained in the Educational Psychology modules on learning, human development, and measurement. A foundation of curricular sequences in Science, Mathematics, Communications, Art, Social Studies, and the other curricular elements is equally essential to the teacher of children with learning disorders.

Advancing in specialization, the WETEP Special Education student learns to integrate this knowledge into strategies and materials for creating environments which will enhance the learning of children with special learning problems. He begins to work out appropriate curricular modifications.

The Special Education program is organized rigorously around the behavioral attributes of the learner. The Element is composed of seven subelements relating to the basic characteristics of teachers of pupils with severe learning disabilities. Each subelement is further divided into four modules. In each case, Module I establishes the basic orientation of the subelement.

Within the Implementation of Learning Theory subelement, the module on Curricular Sequences has been chosen for detailed examination. The basic level of this module might be elected by any WETEP student to compliment his general knowledge of education. The advanced level of the module focuses on the techniques and materials necessary to remediate abnormal learning patterns. Every WETEP graduate should have some competency on this level. But the accomplishment of all criterion behaviors at the Advanced Level would not be expected until some in-service experience had been completed.

A pre-assessment, consisting of interviews, a review of previous evaluations and specific testing, will ascertain the students' level of competency. Great care will be taken in the development of instructional units for field testing and feedback through the assessment system.

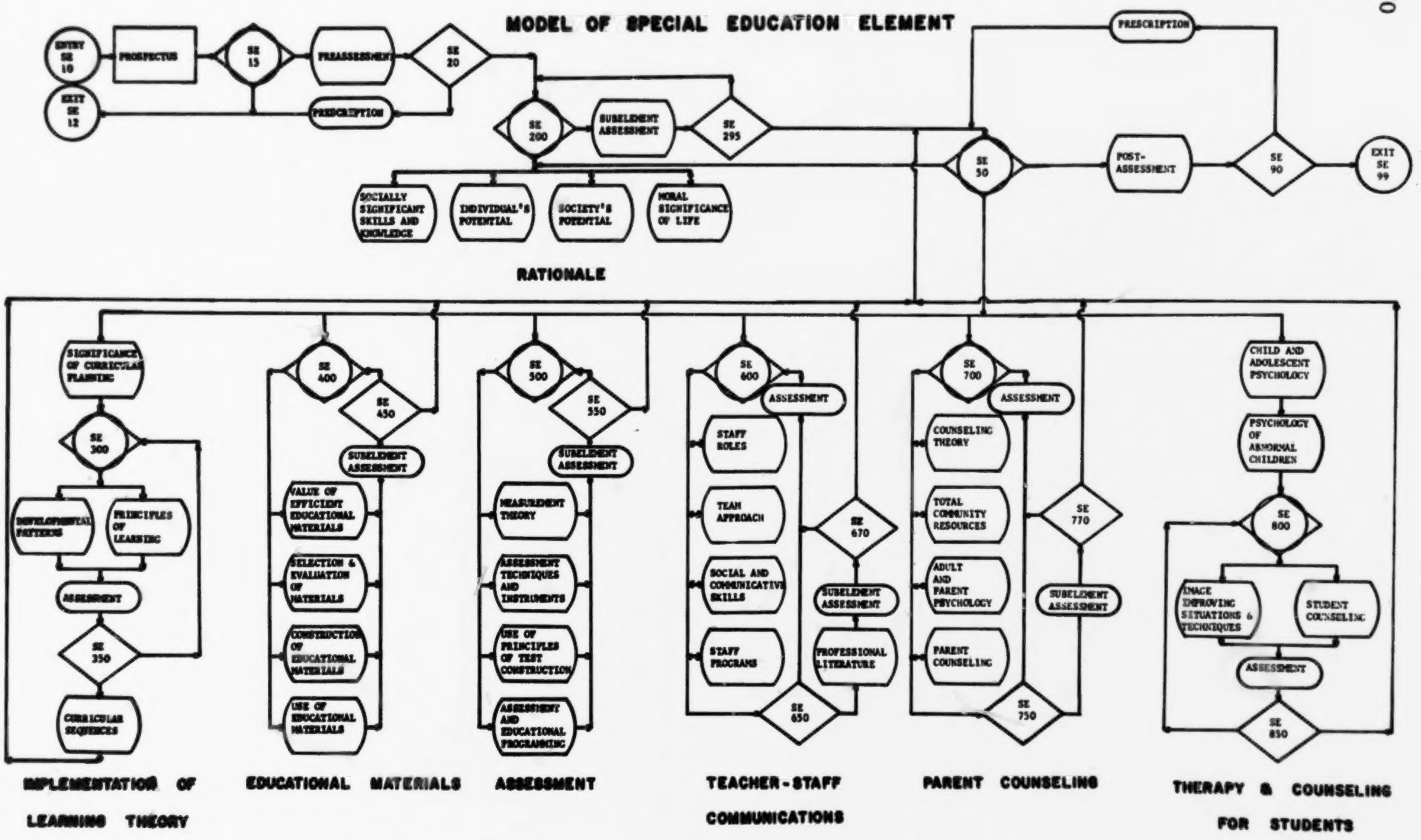
# SPECIAL EDUCATION

The Special Education Element is concerned with the development of knowledges, skills and attitudes that will enable the WETEP teacher to work more effectively with children with severe learning problems. This element is designed to provide background for all students at the pre-service and in-service levels, but more specifically for those students whose prime responsibility is or will be the education of children with marked developmental deficits in the cognitive, social, communication or mobility areas.

This does not represent a change of focus for Special Education teacher education programs; however, it does provide for a change to a more logical relationship between the function of the teacher and the description of the programs in which he is receiving his training. The Special Education Element, like the other WETEP elements, represents a significant change in the manner in which teacher education programs are organized, implemented and evaluated.

A similarly significant aspect of the program is the fact that it is organized rigorously around the behavioral attributes of the learner. This is as true of the students in WETEP as it is of the behavior of the children with whom they will be working. The use of Bloom, et al, Taxonomy of Educational Objectives, provides a framework for the description of these behaviors and attitudes in a systematic manner. The use of this framework, and modifications as they seem appropriate, should facilitate the development of logical, sequential (where needed), evaluative, individualized, multi-dimensional and multi-media programs. This will also allow for the study of developmental patterns of our students along with a knowledge of environmental and other factors--age, sex, ability levels, prerequisites--which might affect learning. The WETEP Special Education Element will similarly include and evaluate theories and descriptions of normal and abnormal developmental patterns and factors affecting the learning of children. The student will learn to integrate this content into strategies and materials to effect environmental changes which will in turn enhance the learning of children with severe learning problems.

The Special Education Element is composed of seven subelements, directly related to the basic characteristics of teachers of children with severe learning disorders (Figure 1). At the extended level of specialization these characteristics are specified in modules which describe behavior essential to the realization of the teacher characteristics. There are four modules in each subelement. This number of modules is not due to design, but seems to represent adequately the scope and sequence of each subelement. The modules in Subelements I and II have been used as representative examples of further categorizations according to Bloom's levels of cognitive educational goals and Krathwohl's levels of affective educational goals. The Knowledge


MODEL OF SPECIAL EDUCATION ELEMENT
ENTRY SE 10
PROSPECTUS
SE 15
PREASSESSMENT
SE 20
EXIT SE 12
PRESCRIPTION
SE 200
SUBELEMENT ASSESSMENT
SE 295
SOCIALLY SIGNIFICANT SKILLS AND KNOWLEDGE
INDIVIDUAL'S POTENTIAL
SOCIETY'S POTENTIAL
MORAL SIGNIFICANCE OF LIFE
RATIONALE
SE 50
PRESCRIPTION
POST-ASSESSMENT
SE 90
EXIT SE 99
SIGNIFICANCE OF CURRICULAR PLANNING
SE 300
DEVELOPMENTAL PATTERNS
PRINCIPLES OF LEARNING
ASSESSMENT
SE 350
CURRICULAR SEQUENCES
IMPLEMENTATION OF LEARNING THEORY
SE 400
SE 450
SUBELEMENT ASSESSMENT
VALUE OF EFFICIENT EDUCATIONAL MATERIALS
SELECTION & EVALUATION OF MATERIALS
CONSTRUCTION OF EDUCATIONAL MATERIALS
USE OF EDUCATIONAL MATERIALS
EDUCATIONAL MATERIALS
SE 500
SE 550
SUBELEMENT ASSESSMENT
MEASUREMENT THEORY
ASSESSMENT TECHNIQUES AND INSTRUMENTS
USE OF PRINCIPLES OF TEST CONSTRUCTION
ASSESSMENT AND EDUCATIONAL PROGRAMMING
ASSESSMENT
SE 600
ASSESSMENT
STAFF ROLES
TEAM APPROACH
SOCIAL AND COMMUNICATIVE SKILLS
STAFF PROGRAMS
SE 670
SUBELEMENT ASSESSMENT
PROFESSIONAL LITERATURE
SE 650
TEACHER-STAFF COMMUNICATIONS
SE 700
ASSESSMENT
COUNSELING THEORY
TOTAL COMMUNITY RESOURCES
ADULT AND PARENT PSYCHOLOGY
PARENT COUNSELING
SE 770
SUBELEMENT ASSESSMENT
SE 750
PARENT COUNSELING
CHILD AND ADOLESCENT PSYCHOLOGY
PSYCHOLOGY OF ABNORMAL CHILDREN
SE 800
IMAGE IMPROVING SITUATIONS & TECHNIQUES
STUDENT COUNSELING
ASSESSMENT
SE 850
THERAPY & COUNSELING FOR STUDENTS

MODEL OF SPECIAL EDUCATION ELEMENT

FIGURE 1

Level of the Cognitive Domain of Module I in Subelement I has been developed into specific content material, including an introductory overview, criterion behaviors, an objective content outline, specific lesson content, and media. The choice of specific media is in the process of development as are the other modules and special teaching units.

The WETEP Special Education Element attempts to maintain a structure necessary to give it logic and consistency while being flexible enough to make it viable for students with a variety of backgrounds and abilities and an interest in special learning problems of children. This element is designed to provide for this wide range of students and to integrate the essentials of good teaching skills into the repertoire of the Special Education teacher. The Basic Level of teaching objectives (Table 1) represents the core of this element. Coordination with other elements may be very complex. For example, consider the Curricular Sequences Module (Figure 2). The teacher of children with special learning disabilities needs to have a foundation of knowledge of curricular sequences in science, mathematics, communications, art, social studies, etc., before an understanding of curricular modifications can be realized.

It is considered essential to the entry (Entry SE 3000) into the Special Education Module on curricular sequences that the student have a background of knowledge and skill in the basic curricular sequences (mathematics, communication, social studies, science, art, etc.) and in the Educational Psychology Element in learning, human development and measurement. The pre-assessment, consisting of interviews, a review of previous evaluations and specific testing, will ascertain the students' level of competency. From this pre-assessment the student may enter the Special Education basic curricular modification units (decision point SE 3050) or may be advised to reschedule specific elements for more work to reach a criterion. Advance work in the other elements may be elected concurrently with the Special Education modification units.

The Basic Level of this module offers the student introductory work in Special Education modification of these curricular sequences. This content or these particular units might be elected by any WETEP student to compliment his understanding of the process of education. The Advanced Level of this module has a broad continuum of knowledge and skills which integrates general information and skills in the child development and curricular areas and establishes competency in the ability to organize and implement effective learning experiences for children with severe behavioral deficits. The focus at this level is on the techniques and materials which are necessary to remediate abnormal learning patterns in the social, cognitive, communication, and mobility areas. The student graduating with a bachelors degree must have some competency in these behavioral categories, but the accomplishment of all criterion behaviors at the Advanced Level would not be expected until some in-service experience has been completed.

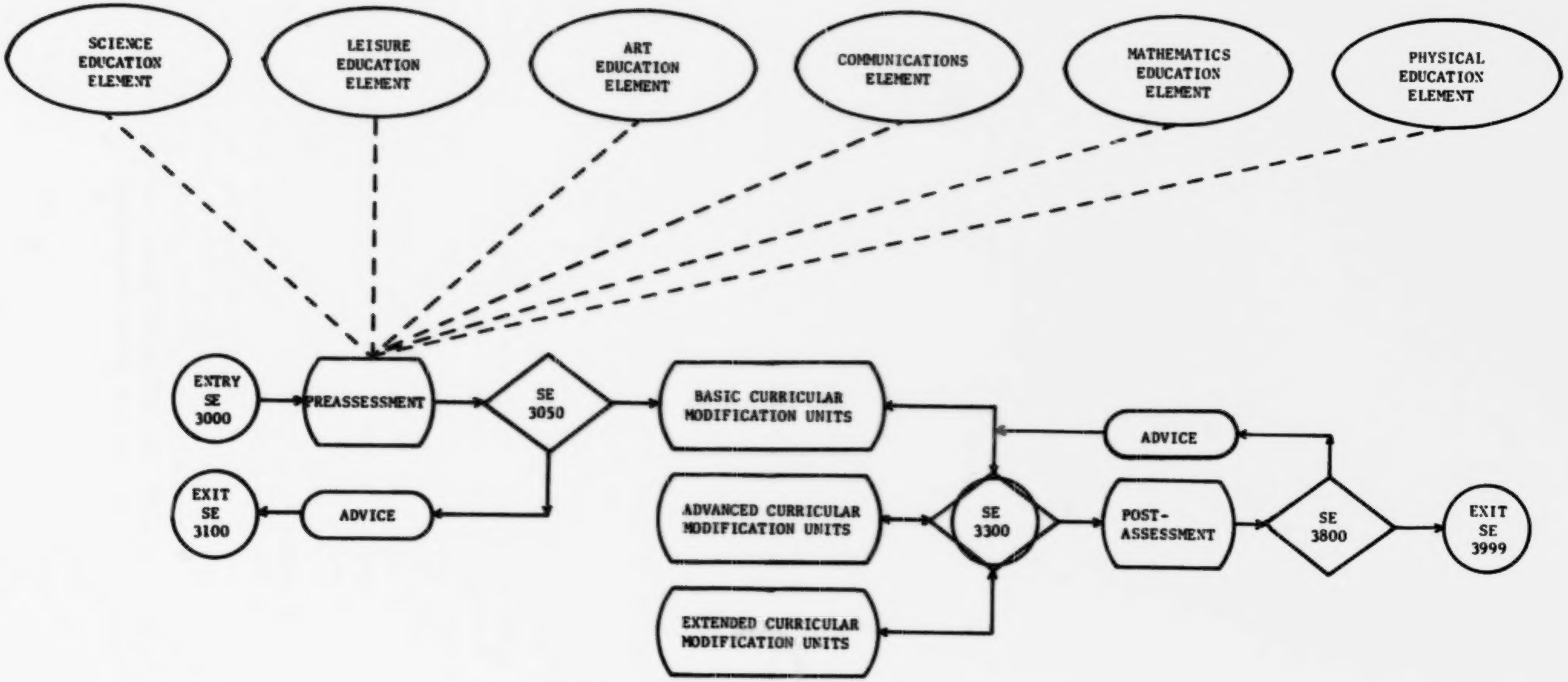

SCIENCE EDUCATION ELEMENT
LEISURE EDUCATION ELEMENT
ART EDUCATION ELEMENT
COMMUNICATIONS ELEMENT
MATHEMATICS EDUCATION ELEMENT
PHYSICAL EDUCATION ELEMENT
ENTRY SE 3000
PREASSESSMENT
SE 3050
BASIC CURRICULAR MODIFICATION UNITS
ADVICE
EXIT SE 3100
ADVICE
ADVANCED CURRICULAR MODIFICATION UNITS
SE 3300
POST-ASSESSMENT
SE 3800
EXIT SE 3999
EXTENDED CURRICULAR MODIFICATION UNITS

ILLUSTRATION OF THE INTERRELATIONSHIP OF
SPECIAL EDUCATION'S CURRICULAR SEQUENCES
MODULE WITH OTHER WETEP ELEMENTS

FIGURE 2

The order of the subelements is important only insofar as it constitutes a meaningful progression. The student would normally take Subelement I first, dealing with the rationale for educational programs for individual children. This would usually be followed by Module I of Subelement II which introduces knowledge of the need for programming for specific learning problems. Subsequently the student would be aided in planning a sequence in the remaining subelements. As the student enters a subelement the modular progression would be suggested, but the only requirement would be that Module I be taken first as it establishes the basic orientation of the subelement. From this point the student might elect any other module or he might leave the subelement to return later.

The student's accomplishment of the criterion behaviors is carefully assessed after the completion of each unit, level, module, and subelement and again before he exits (Exit SE 3999) from the element. At assessment check points, criteria of success will be established and students will be advised as to appropriate courses of action.

The Special Education Element provides a basis for establishing and evaluating the behaviors essential to teachers of children with severe learning problems. This element has a unique complexity due to the necessary integration and coordination with other elements of WETEP, particularly in the areas of curriculum and educational psychology, and also in the related general course work in the student's program in the university.

The nature of the instructional task for children with severe learning problems is most complex. Great care needs to be taken in the development of the instructional units with ample opportunity for field testing and feedback through the assessment system.

## Description of the
## WETEP Special Education Element Categories, and
## Content of Categories

| Categories | Content of Categories |
|---|---|
| Subelement | The seven characteristics of a WETEP special education teacher. |
| Modules | Specified behavior designating the scope and sequence of each of the subelements. |
| Levels | Level of performance according to the Bloom Taxonomy within each module. |
| Units | Specific behaviors within each cognitive or affective level. Tasks may be basic, extended or advanced in complexity. |
| Forms | Modes of presenting a learning experience assigned to or elected by a student to elicit a desired behavior according to each level of each unit. |

## SUBELEMENTS

I. The teacher will be able to provide a rationale for educational programs for children with severe learning problems within the framework of a value system.

II. The teacher can organize and implement effective learning experiences for children with severe learning problems (cognition, communication, social behavior, mobility, or combination of these) in terms of appropriate theory.

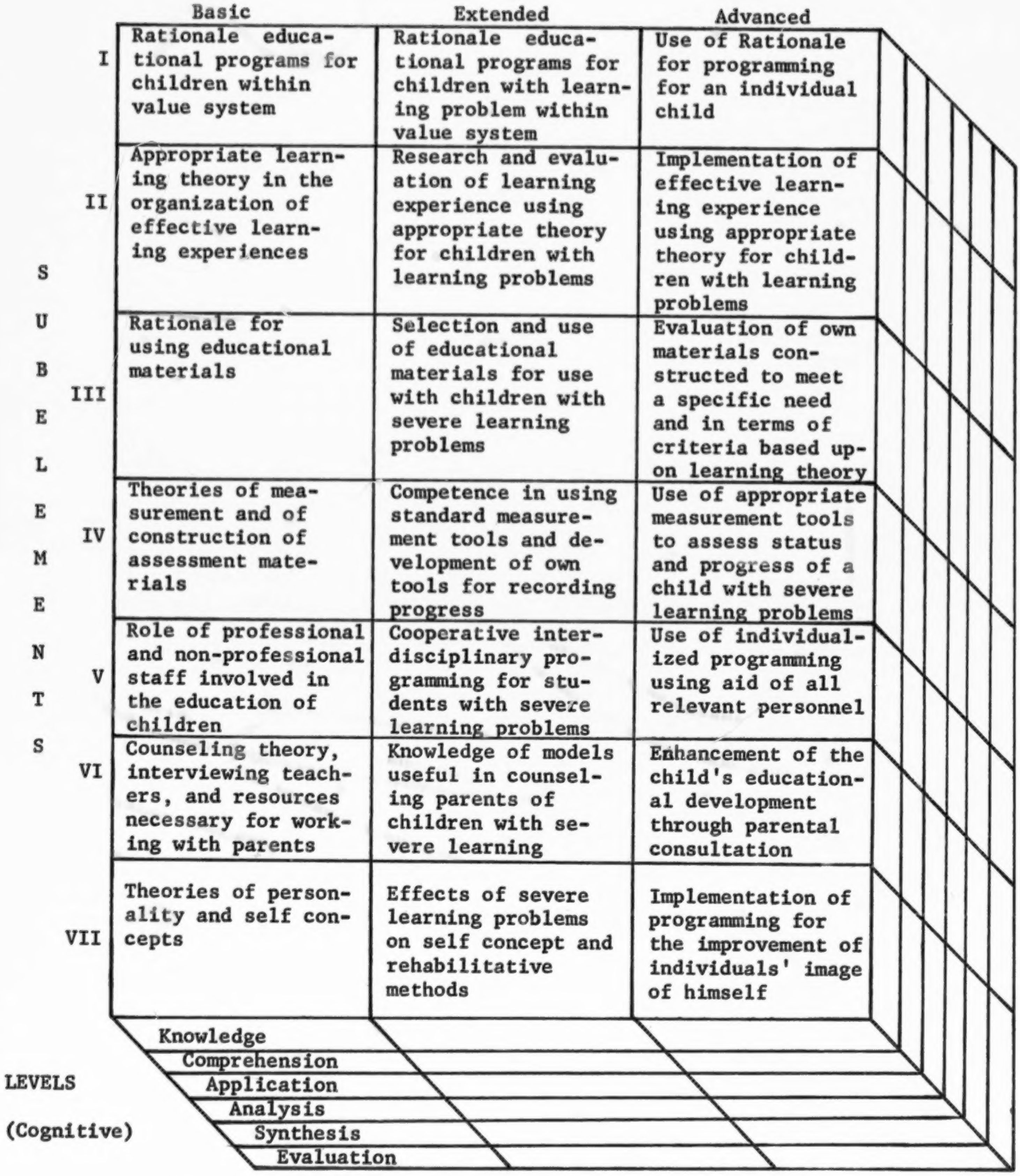
III. The teacher will be able to select, construct, use, and assess educational materials appropriate for use with children with severe learning problems.

IV. The teacher is able to assess the status and subsequent progress of development on children with severe learning problems.

V. The teacher can communicate with others as an aid to programming for children with severe learning problems.

VI. The teacher is able to help parents understand and cope with the learning problems of their children.

VII. The teacher can assist the students achieve positive self concepts.



| SUBELEMENTS | Basic | Extended | Advanced |
|---|---|---|---|
| I | Rationale educational programs for children within value system | Rationale educational programs for children with learning problem within value system | Use of Rationale for programming for an individual child |
| II | Appropriate learning theory in the organization of effective learning experiences | Research and evaluation of learning experience using appropriate theory for children with learning problems | Implementation of effective learning experience using appropriate theory for children with learning problems |
| III | Rationale for using educational materials | Selection and use of educational materials for use with children with severe learning problems | Evaluation of own materials constructed to meet a specific need and in terms of criteria based upon learning theory |
| IV | Theories of measurement and of construction of assessment materials | Competence in using standard measurement tools and development of own tools for recording progress | Use of appropriate measurement tools to assess status and progress of a child with severe learning problems |
| V | Role of professional and non-professional staff involved in the education of children | Cooperative interdisciplinary programming for students with severe learning problems | Use of individualized programming using aid of all relevant personnel |
| VI | Counseling theory, interviewing teachers, and resources necessary for working with parents | Knowledge of models useful in counseling parents of children with severe learning | Enhancement of the child's educational development through parental consultation |
| VII | Theories of personality and self concepts | Effects of severe learning problems on self concept and rehabilitative methods | Implementation of programming for the improvement of individuals' image of himself |

THREE-DIMENSIONAL REPRESENTATION OF SPECIAL EDUCATION ELEMENT OBJECTIVES
TABLE 1

SUBELEMENT I: Provides a rationale for educational programs for children with severe learning problems within the framework of a value system

MODULE 1: Knows and comprehends the development of educational programs on the basis of the value of specific socially significant skills and knowledge.

MODULE 2: Knows and comprehends the rationale for educational programming on the basis of maximization of individual potential.

MODULE 3: Knows and comprehends the rationale for educational programming on the basis of maximization of the potential of a society.

MODULE 4: Knows and comprehends the rationale for educational programming on the basis of maximization of the moral significance of the learner's life.

SUBELEMENT I (CONTINUED)

Module 1: Knows and comprehends the development of educational programs on the basis of the value of specific socially significant skills and knowledge

COGNITIVE DOMAIN

Knowledge:

Knows the value of teaching based on the development of socially significant skills in the areas of learning, communication, social behavior, and mobility.

Comprehension:

Rationalizes the value of teaching based on the development of socially significant skills in the areas of learning, communication, social behavior, and mobility.

Application:

Uses this rationalization of the value of socially significant skills and knowledge as a basis for educational planning.

Analysis:

An. 1 - Identifies those specific socially significant skills and learnings that are valued and the criteria used informing these values.

An. 2 - Recognizes the interaction between specific significant skills and learnings and specific areas of emphasis in developing educational programs.

Synthesis:

Develops own educational philosophy and program based upon own valued socially significant skills and knowledge.

Evaluation:

Evaluates educational programs using the criteria of present day valued socially significant skills and knowledge.

AFFECTIVE DOMAIN

Receiving:

Is aware that educational programs are developed on the basis of the value of specific socially significant skills and knowledge.

Responding:

Accepts specific socially significant skills and knowledge as the basis for the development of all educational programs.

Valuing:

Values educational programs that are developed in accordance with the significant skills and knowledges of the day.

Organization:

Conceptualizes an educational program based on the skills and knowledge he considers to be most significant.

Characterization:

Constantly prepared to revise educational programs to meet new socially significant skills and knowledge.

SUBELEMENT: I
MODULE: 1
Knowledge Level (K)

Basic Unit

$L_1$ Know history of learning programs. Fact 1____, Fact 2____, Fact 3____, etc.

$L_2$ Know concept of universal education.

$L_3$ Know role of education of children with severe learning problems under concept of universal education.

$L_4$ Know that learning creates freedom to do.

Extended Unit

$L_5$ Know history of learning programs for children with severe learning problems.

$L_6$ Know efficacy of learning studies on programs for children with severe learning problems.

Advanced Unit

$L_7$ Derives knowledge from personal research and analysis.

## SUBELEMENT I, MODULE 1: COGNITIVE LEVEL - KNOWLEDGE

Extended Unit: History of Education and Treatment Programs for
People with Severe Learning Problems
Introductory Overview

### Pre-Christian Era

Objectives:

I. Know that primitive and even more advanced societies generally destroyed or mistreated the handicapped.

II. Know that complex societies could tolerate and even utilize individual differences - the handicapped.

III. Know about references to handicapped in ancient law.

IV. Know that people with deviant learning patterns and social behavior patterns were often considered to have influence with or be influenced by the gods.

I. Know that primitive and even more advanced societies generally destroyed or mistreated the handicapped.
Content:
- A. The law of "the survival of the fittest" determined that the weak should die.
  - 1. Hunting and grazing cultures needed to be extremely mobile.
  - 2. The crippled and deformed were destroyed at birth by cultures such as the Spartan and Hawaiian.
- B. Lack of tolerance or pity for the handicapped in this era.
  - 1. Fools and stutterers were used to entertain people in Rome.
  - 2. Under Roman law the deaf and mute were considered to be without intelligence.
  - 3. Deaf were classified with fools and children by Talmud in Jewish law, 2nd Century B.C.

II. Know that complex societies could tolerate and even utilize individual differences - the handicapped.
Content:
- A. Some early religions pleaded for tolerance and care.
  - 1. Confucius in China
  - 2. Zoroaster in Persia
  - 3. Hebraic law.

- B. Sedentary life provided more opportunity for the handicapped to be useful.
  - 1. Blind were used as professional mourners by Egyptians.

III. Know about references to handicapped in ancient law.
Content: Legal definitions generally degraded the handicapped person's worth but sometimes provided protection.

1. 449 B.C. Twelve Tables of Rome - placed fools and their possessions under the care of their families.
2. Under Roman law the mentally disabled couldn't form valid contracts nor were they legally obligated for crimes.
3. 200 B.C. - Deaf classified with fools and children by the Talmud.
4. Roman law held that the deaf and mute were without intelligence.

IV. Know that people with deviant learning patterns and social behavior patterns were often considered to have influence with, or be influenced by the gods.
Content: Superstitious nature of the people lead to serious misconceptions that have filtered down through the ages.

1. Torture and execution among those people who considered them to be demons.
2. Awesome respect paid by other people, ie. Western Plains Indians.

## Christian Era through the Reformation

Objectives:

I. Know religious attitudes toward people with severe learning problems.

II. Know of the Christian Church's responsibility for the less fortunate in Europe in the Middle Ages and that it was the main agency of care.

III. Know that there was a distinct difference between Catholic and Protestant attitudes toward those with learning and social behavior .problems.

IV. Know that the State began to assume some responsibility for the handicapped.

I. Know religious attitudes toward people with severe learning problems.
Content: Religion gave the handicapped a place in the brotherhood of man.

1. According to the New Testament, Christ taught his followers by word and deed to care for the feebleminded, demoniac, and the physically infirm or afflicted.
2. Islam proposed a society free from cruelty and filled with kindness for all in 700 A.D.

II. Know of the Christian Church's responsibility for the less fortunate in Europe in the Middle Ages and that it was the main agency of care.

Content: Christianity provides care and shelter for the handicapped.

1. 4th century A.D. beginning of custodial care for handicapped established by Bishop of Myra
2. 13th century - first colony for mentally defective established in Belgium.
3. 17th century - St. Vincent De Paul and the Sisters of Charity aided the unfortunate - some teaching in manual labor.

III. Know that there was a distinct difference between Catholic and Protestant attitudes toward those with learning and social behavior problems.

Content: Catholic tolerance of unfortunate was superceded by intolerance under leading Protestant figures.

1. During the 12th and 13th centuries the retarded were used as court jesters and fools.
2. In several Catholic countries the retarded and disturbed were considered "heavenly infants" and allowed to run unmolested.
3. 15th century - Luther and Calvin denounced imbeciles as evil spirits and had them beaten.
4. Witch hunts in Europe and New England.

IV. Know that the State began to assume some responsibility for the handicapped.

Content: The growing countries assume more responsibility as they assert more control.

1. 12th century - Imbeciles were legally wards of the king in England.
2. 1255-1290 England statute de Praerogativa regis separated idiots and lunatics by legal definition. Governorship of property went to king.

## Period of Social and Scientific Advancement

Objectives:

I. Know of methods and developments related to early medical treatment.

II. Know about the beginning of the movement to educate and train individuals with learning problems.

III. Know about the beginnings of Public School classes for the handicapped.

IV. Know that the World Wars had a substantial effect upon the public's attitudes toward learning problems.

V. Know that state and federal legislation has had major influence on the adjustment and care of people with severe learning problems.

I. Know of methods and developments related to early medical treatment.

Content: From earliest times a few men sought medical answers to learning problems.

1. Prehistoric man practiced trephining to release the evil spirits which "caused" mental illness.
2. 528-500 B.C. - Anaxagoras conceived of the mind, or nous, as consisting of a finer and more attenuated material than ordinary inert matter.
3. 4th century B.C. - Hippocrates recognized mental disabilities as a natural phenomenon and attempted to classify them.
4. 4th century B.C. - Aristotle and Hippocrates connected deafness and muteness.
5. Galen recognized variations in mental acuity and theorized about the structure and function of the nervous system in the 2nd century A.D.
6. Paracelsus (1493-1541) advocated the use of medicine in treating mental disorders.

II. Know about the beginning of the movement to educate and train most individuals with learning problems.

Content: Early treatment and training was under segregated or institutionalized conditions.

1. 17th and 18th century - schools established for deaf and blind in Europe.
2. Early 1800's - first schools for retarded and physically handicapped.
3. In U. S. in 19th century Mann, Howe, and Dix pushed for residential schools with training and protection.

III. Know about the beginnings of Public School classes for the handicapped.

Content: Children with severe learning problems are integrated into the public schools.

1. Earliest public school classes in 1890's and 1900's.
2. Beginning of psychometric testing early 1900's.

IV. Know that the World Wars had a substantial effect upon the public's attitudes toward learning problems.

Content: Pre-war testing helped establish magnitude of the problem and wars themselves helped make handicaps more respectable.

1. 1918 - According to Army Alpha and Beta intelligence tests, 20% of the conscripts were mentally deficient.
2. 1919 - World War I victims of gas and physical injuries.
3. 1940's - High failure rate on Army Draft physical and emotional injuries.

V. Know that state and federal legislation has had major influence on the adjustment and care of people with severe learning problems.

Content: Transition from negative to positive legislation.

1. 1917 - Federal Child Labor Law - pushed children out of factories and into schools.
2. 1917 - Amendment to War Risk Insurance Act first brought about the concept of rehabilitation of disabled veterans.
3. 1920 - Initial Vocational Rehabilitation Act passed.
4. 1921 - Maternity and Infancy Act - provided federal grants for child health purposes.
5. 1943 - Public Law 113 provided for a major expansion of the state-federal vocational rehabilitation program.
6. 1957 - PL 83-531 - The Cooperative Research Act provided grants for research in education, especially with the mentally retarded.
7. 1958 - PL 85-926 - Professional Personnel Grants for training leadership personnel in the education of the mentally retarded.
8. 1961 - PL 87-276 - Teachers of the Deaf Grants for training teachers of the deaf.
9. 1963 - PL 88-164 - Created the Division for Handicapped Children and Youth in the U. S. Office of Education.
10. 1963 - PL 88-210 - Vocational Education Act - specifically mentions academic and socio-economic handicaps.
11. 1965 - PL 89-10 - Elementary and Secondary Education Act - included: disadvantaged children, instructional materials, innovation and research centers. Overcame traditional barriers to federal aid to Education.
12. 1965 - PL 89-36 - Established the National Technical Institute for the Deaf.
13. 1965 - PL 89-313 - Provided grants to states for children in state operated or supported schools for the handicapped.
14. 1966 - PL 89-750 - Education of Handicapped Children (Title VI, ESEA)
    a. Established Bureau for Education of the Handicapped.
    b. Provided grants to states for preschool, elementary, and secondary school children.
15. 1967 - PL 90-170 - Physical Education and Recreation for the Handicapped.
16. 1967 - PL 90-247 - Amendments to Title VI, ESEA
    a. Regional Resource Centers.
    b. Centers for deaf-blind children.
    c. Expanded media services.
    d. Increased funding to states for research.
    e. Grants for recruitment and information dissemination

# EXAMPLE 1

Element: Special Education
Subelement: I
Module: 1
Cognitive Level: Knowledge
Extended Unit: History of Learning Programs for Children with Severe Learning Problems

Prospectus: The learning deficits section deals with historical developments primarily relevant to the mentally retarded with some reference made to the visually handicapped in regard to their learning ability. Chronologically, this section begins with the early schools in 18th century France, spans the periods of institutionalization and special class organization, and closes on recent developments and events. The emphasis here is two-fold. First, you are expected to know historical facts and be able to explain developments in the education of people with learning deficits on the basis of these facts. Secondly, this section is designed to give you an understanding of the significance of programs for children with learning deficits.

You will receive presentations on film, audio tape, video tape, and printed sheets.

Prerequisites: 1) History of Learning Programs
2) Section 1 of the History of Programs for Children with Severe Learning Problems

Program Time: 1½ Hours

Authors: Special Education Staff

## Objectives

I. Know of the early attempts to educate the blind and mentally retarded and the major figures involved.

II. Know the development of institutions for the mentally retarded.

III. Know the development of public school classes and the instructional curricula used.

IV. Know the development and impact of mensuration devices.

V. Know the studies that led to the concern for social control of the mentally retarded and efforts taken in that regard.

VI. Know scientific investigations and classifications made in the area of mental retardation.

VII. Know the development and influence of parental and professional organizations.

VIII. Know of the development of concern for individual variability and of the continuum of services for the mentally retarded.

IX. Student will develop a greater awareness of the value of education for children with severe learning problems. (This objective is not broken down into lessons as it is understood to be an objective of all of them.)

## Pretest

This pretest will assess the student's knowledge of basic historic facts and his ability to utilize this knowledge in explaining historical developments, plus his attitude toward the education of the mentally retarded and the blind. This automated test is presented over a video receiver so that it can be taken either individually in a carrel or in small group seminars. Responses to the test items are registered by push buttons or are typed. The pretest is scored immediately.

There are two criterion points on the pretest. The first is a measure of the student's proficiency in the prerequisites. If the student does not pass this point he is not allowed entry into the section. The second criterion point designates a passing grade on the test which results in the test being terminated at that point. Upon completion of the test the student is provided with a graded printout of the test questions and his responses. Procedural instructions are listed on the same sheet. Generally the student is faced with three alternatives: to go back and learn the prerequisites, to enter the section, or to go on to the next section of the unit if the test grade merits such action.

## Criterion Behaviors

1a In response to multiple choice questions the student will answer that school programs for the blind started earlier than those for the mentally retarded and that these programs began in France.

1b Student will answer from memory the name Itard in response to the question of who made the first systematic attempt at educating the mentally retarded.

1c From a presented list of biographical notes, the student will select and put in chronological order those notes which pertain to Seguin's training, his acquaintance with Itard, and his work in the United States.

1d On a matching question the student will match the descriptions of 19th century educational programs for the blind with the proper countries for England, Germany, and the United States.

2a Student will select from a list of five, first the sentence that best describes the original emphasis of institutions for the retarded and second the sentence which best describes the emphasis in the latter 19th century.

2b From descriptions of three residential facilities for the mentally retarded the student will pick the one that best describes a "colony."

3a From a list of five countries and decades the student will select "Germany" and "1860's" in response to a question concerning the time and location of the first public school classes for the mentally retarded.

3b The student will say from memory that it was around 1900 that public school classes for the blind, partially sighted, and mentally retarded began in the United States.

3c Student will match the names of Montessori, Decloy, Dewey, and Inskeep with descriptions of their respective educational programs.

3d Given a detailed description of modern educational programming the student will select those points in it which are related to the impact of Montessori and Dewey.

3e Student will select the correct description of the unit of experience method from a list of five descriptions.

3f Student will select the best description of the advantages of the persisting life situations approach from a list of five.

4a Student will write from memory that Binet and Simon constructed the first intelligence assessment device.

4b From a list the student will choose those items which represent the early adverse effects of intelligence tests.

4c From a list of five choices the student will pick out the real danger in using intelligence test scores incorrectly.

4d Student will select from a list the positive effects of intelligence testing on educational programming.

5a Student will select the best summary of the Kallikak study from a list of four.

5b Student will write that studies such as the Juke's and the Kallikak's had a substantial impact on the use of institutionalization and sterilization to "protect" society.

5c Student will select the correct date of the first state sterilization law from a list of three.

5d Student will list four "categories" of people who were and are subject to sterilization laws.

5e Student will respond affirmatively tothe two questions of whether or not state sterilization laws have been upheld by the Supreme Court and whether they are still in effect.

6a Student will select the names of Down and Ireland from a list of five as two men who made early attempts at classifying the mentally retarded.

6b From a list of four the student will pick "cretins" as the classification of the mentally retarded that received rather extensive study in 18th and 19th century Europe.

6c Student will choose the answer "Folling's discovery of reversible metabolic disturbance" to answer the question "what discovery awakened medical science in the area of mental retardation?"

7a Student will select the answer of 100 years from a list of four in response to the question of the approximate age of organizational interest in the mentally retarded in the United States.

7b Given a paragraph which purports to describe the activities and powers of parental and professional associations the student will select the correct statements.

8a Given a paragraph on the awareness of variability among the retarded the student will select three accurate positive statements.

8b Student will write from memory that the 1920's was the decade in which variability among the retarded was first studied.

8c From a list of decades the student will pick the 1950's as the one in which pre-school classes began.

8d Given a list of services the student will select five that are available for the blind and mentally retarded.

*9a On a scale used to assess one's sympathy for and understanding of people with severe learning problems the student will achieve a score of 60.

9b Student will list five pieces of historical evidence supportive of a rationale for educating people with learning problems.

9c Given a paragraph outwardly attacking educational programs for children with learning problems the student can pick out those values expressed that are actually supportive.

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[*] Criterion behaviors 9a, 9b, and 9c are related to all the lessons within the History of Learning Programs for Children with Severe Learning Problems unit. Since it is understood that they relate to all, they will not be listed with the individual lessons.

## EXAMPLE 1 -- EXPANDED

SUBELEMENT I, MODULE 1: COGNITIVE LEVEL - KNOWLEDGE
Extended Unit: History of Learning Programs for Children with Severe Learning Problems

### Communications

Objectives

I. Know that communication problems were the first of the learning problems to receive help through education.

II. Know the history of the manual method and oral method for teaching the deaf.

III. Know the influence of braille on the ability of the visually handicapped to communicate.

IV. Know the history of U. S. educational programs for those with communicative disorders.

V. Know of the technical and social advances made in the area of remediating communicative abilities.

Objectives Expanded

I. Know that communication problems were the first of the learning problems to receive help through education.
Content: Education of the deaf started comparatively early.
  1. 16th - 17th centuries - Earliest recorded attempts to teach deaf.
  2. 1755 - First school for deaf in Paris used manual method.

II. Know the history of the manual method and oral method for teaching the deaf.
Content: Early conflict between advocates of the two methods gave way to use of the most effective.
  1. 1620 - Benet published manual alphabet to teach language to deaf.
  2. 1760 - School for deaf in Hamburg used oral method.
  3. 1890 - Oral method prevails over manual in U. S. and Europe.

III. Know the influence of braille on the ability of the visually handicapped to communicate.
Content: Braille enabled the blind to read and write.
  1. 1825 - Point alphabet invented by Braille.

IV. Know the history of the U. S. educational programs for those with communicative disorders.
Content: U. S. educational facilities range up to college level.
  1. 1817 - Gallaudet organized first U. S. school for deaf.

2. 1864 - National Deaf-Mute College opened (Gallaudet).
3. 1870's - Beginning of day schools for deaf.
4. 1880's - First private schools for speech defectives are established.
5. 1910 (circa) - Beginning of classes for the hard of hearing.
6. 1910 - Start of speech correction in the public schools.
7. 1930's - Great increase in number of classes for the hard of hearing.

8. 1965 - National Technical Institute for Deaf established.

V. Know of the technical and social advances made in the area of remediating communicative abilities.
Content: Testing and communicative aids opened new areas and gave birth to new questions.
1. Alexander Bell's inventions.
2. 1915 - Intelligence test study showed deaf to have lower average intelligence than normals.
3. 1926 - Start of audiometric testing.
4. 1940's - Increased interest in aphasia and deafness resulting from war injuries.
   - Extensive use of braille writers and electronic devices in the education of the blind.
5. 1950's - Development of compressed speech techniques.

## Mobility

Objectives

I. Know of early efforts to care for and educate the physically handicapped in the 19th century.

II. Know of the effects of increased public concern on state and federal legislations.

III. Know the history of public school programs in the U. S.

IV. Know pertinent medical and technical advances.

Objectives Expanded

I. Know of early efforts to care for and educate the physically handicapped in the 19th century.
Content: Initial stress on care led to separate educational facilities.
1. 1800 - Important orthopedic surgeons at work in France, Germany, England, and United States.
2. 1832 - Germany (Munich) - first attempt to educate crippled in specially adapted settings.
3. 1861 - Dr. Knight began work with crippled in New York.

III. Know the history of public school programs in the U. S.
Content: Public school classes provide chance for improved social and vocational adjustment.
1. 1900 (approx.) - Beginning of public school education in London and Chicago.
2. 1910 - Over 3,000 crippled children were being educated in four large U. S. cities.
3. 1925 - Los Angeles the first city to organize an occupational therapy deaprtment within education program.

IV. Know pertinent medical and technical advances.
Content: Science provides cures and technical aids.
1. Late 1940's - Opening of schools to teach blind to be more mobile through the use of canes and dogs.
2. 1956 - Salk vaccine conquers polio.
3. 1960's - Great advances in the development of artificial limbs and guidance devices.
4. Knowledge of defects due to drugs, ie. blood incompatibility, genetic anomalies, thalidomide.
5. Improvements in pre natal and child care.
6. Improved obstetrical techniques.

## Social Behavior

Objectives

I. Know that children with deviant social behavior patterns were generally treated as criminals until very recently.

II. Have an acquaintance with the guidance and public school facilities that did exist prior to 1940.

III. Know of the increased interest in children with deviant behavior patterns within the last 30 years and the major educational techniques used.

Objectives Expanded

I. Know that children with deviant social behavior patterns were generally treated as criminals until very recently.
Content: Early theme was punishment of the deviant and protection for the general public.
1. 1820's - Formation of local houses of refuge in larger U. S. cities for the maladjusted boys.
2. Mid 1800's - Children seven and up were treated like adult criminals in England and sent to prison.
3. 1846 - First state institution for socially handicapped established in Massachusetts.
4. 1850's - First reformatory school act.

II. Have an acquaintance with the guidance and public school facilities that did exist prior to 1940.

Content: Beginning of interest in education and counseling as a means of remediating social deviance.

1. 1890's - Public School classes for problem children in major U. S. cities.
2. 1909 - Mental hygiene movement started - Clifford Beers, The Mind That Found Itself.
3. 1922 - Child guidance centers established.
4. 1930 - Child Psychiatric Clinic at Johns Hopkins - first alliance of pediatrics and psychology.

III. Know of the increased interest in children with deviant behavior patterns within the last 30 years and the major educational techniques used.

Content: Intensive concern led to search for effective educational practices.

1. 1941 - Beginning of growing interest in childhood schizophrenia.
2. 1940's - Psychoanalytic approach to educating disturbed - Redl, Bettelheim.
3. 1962 - Use of the structured classroom.
4. Late 1960's - Introduction of operant conditioning techniques.

## Conceptualization

Objectives

I. Know of the early attempts to educate the blind and mentally retarded and the major figures involved.

II. Know about the development of institutions for the mentally retarded.

III. Know about the development of public school classes and the instructional curriculums used.

IV. Know about the development and impact of mensuration devices.

V. Know about the studies that led to the concern for social control of the retarded and efforts taken in that regard.

VI. Know about scientific investigations and classifications made in the area of mental retardation.

VII. Know about the development and influence of parental and professional organizations.

VIII. Know of the development of concern for individual variability and of the continuum of services for the retarded.

## Objectives Expanded

I. Know of the early attempts to educate the blind and mentally retarded and the major figures involved.

Content: Early efforts at training and education.

1. 1784 - First school for blind founded in Paris.
2. 1800 (approx.) - Itard attempts to educate the wild boy of Aveyron using a sensory approach.
3. 1800's (early) - Initial recognition that the partially sighted should not be educated with the blind.
4. 1830's - First school for the blind established in the United States.
5. 1837 - Seguin established the first successful school for retarded in the United States.
6. 1840's - Differing educational emphasis for the visually handicapped
   - England - trade
   - Germany - balanced intellectual and vocational
   - United States - general and intellectual
7. 1848 - Seguin moved to the United States and was instrumental in establishing and/or directing, several schools here.
8. 1850's - Seguin wrote a text on mental retardation espousing the physiological method of education.

II. Know about the development of institutions for the mentally retarded.

Content: Beginning of systematic institutional care.

1. 1840's - Guggenbuhl was the originator of the idea and practice of institutionalized care for feeble-minded in Switzerland.
2. 1850's - Early state supported schools established in the United States.
3. 1875 - 25 state and 5 private schools for blind in the United States.
4. 1881 - Formation of a colony - more opportunities in occupational and social areas.
5. 1900 (approx.) - shift in concern of the institutions from the needs of the individual toward consideration of the needs of society.

III. Know about the development of public school classes and the instructional curriculums used.

Content: Establishment of public school classes and the development of curricula.

1. 1860's - Germany had many special education classes for the mentally retarded.
2. 1900 (approx.) - Special classes for blind, partially sighted, and mentally retarded in the United States.

IV. Know about the development and impact of mensuration devices.
Content: Standardized assessment devices contribution to better programming.
1. 1905 - Binet and Simon's Intelligence Scale.
2. 1916 - Use of standardized tests during World War I.
3. 1925 - Gesell's Developmental Scale.

V. Know about the studies that led to the concern for social control of the retarded and efforts taken in that regard.
Content: Public became alarmed at the supposed prospect of an ever increasing mass of unruly and mentally retarded people.
1. 1877 - Jukes Study.
2. 1907 - Beginning of state sterilization laws (Indiana).
3. 1912 - Goddard's Kallikak Study.

VI. Know about scientific investigations and classifications made in the area of mental retardation.
Content: Efforts were made to identify types and causes of retardation.
1. 1780's - Fodere performed an autopsy and examination of cerebral lesions on a cretin.
2. - Down's classification according to racial types.
3. 1877 - Ireland's classification by etiology and pathological factors.
4. 1934 - Folling's discovery of reversible metabolic disturbance (PKU) awakens medical science interest in retardation.

VII. Know about the development and influence of parental and professional organizations.
Content: Concerned laymen and professionals joined together to aid the retarded.
1. 1870's - First national organization founded.
2. 1933 - First parent organization established in Cleveland.
3. 1950 - Establishment of National Association for Retarded Children.

VIII. Know of the development of concern for individual variability and of the continuum of services for the retarded.
Content: As the individuality of the retarded became more apparent services multiplied to give as complete a program as possible.
1. 1920-30 - Increased study ofvvariability among the retarded.
2. 1920-30 - Statewide coordination of service.
3. 1950's - Development of pre-school and high school programs, development of sheltered work facilities, support from federal, state, and county units.
4. 1960 - Broadening of general support of programs of research, personnel training, education, medical service and rehabilitation.

## Content Development - Selected Lessons - Conceptualization

### Introduction

To eliminate needless repetition within the descriptions of the lesson procedures, those procedural steps which are standard to all lessons will be described here. At the beginning of every lesson the student will be given an outline containing the objective or objectives, the criterion behaviors, and the lesson material. The student then comes to a Decision Point (DP) at which he must choose between three alternatives: 1. to transfer out of the lesson, 2. to continue in the lesson, or 3. to take the lesson post test without completing the lesson.

### Objective I

Related Criterion Behavior - $I_1$, $I_2$, $I_3$, $I_4$

Procedure: Student enters study carrel complete with a teletype linked to the computer and an audio-video receiver. Upon entry the student identifies himself (student #333173) and requests the program over the teletype. The student is immediately provided with a printout listing the objective, criterion behaviors, and an outline of the information for the instructional period. The same information is also presented on the audio-video receiver (DP).

The first presentation is a six-minute film strip with audio which traces the early developments in the education of the blind. It begins and ends with an outline of the main points in the film. After the closing outline the student is given a five-question quiz on the screen which is marked and scored by the machine. The student is given immediate feedback on his score, and the film strip sequence which contains the information which the student failed to learn is re-shown.

Next the student is shown an eight-minute film on Itard and Seguin. The first three minutes of the film are devoted to Itard and his work with Victor, there is a one-minute overlap regarding the relationship between Itard and Seguin, and four minutes of Seguin's work. This film is also preceded by and ended with an outline.

The student is given two minutes to review the printed lesson outline and to recall sections of the films. He is then given a multiple choice quiz on the material for the whole session. (20 minutes)

### Objective II

Related Criterion Behaviors - $II_1$, $II_2$

Procedure: Five to ten students enter a circular seminar room and seat themselves at individual desks. Each desk is equipped with its own set of controls for responding, and in the desk tops there are viewing screens for presenting still materials. The walls are movie screens with the projection coming from behind the walls. The students register and call for the program via the teletype. Each student is shown an outline, including the criterion behaviors, of the lesson on his desk viewer and the outline is presented on tape also (DP). The lesson presentation is an eight-minute film tracing the development of institutions for the retarded and blind in the 19th century. The students become residents of these institutions as the circular screen completely encompasses them. The lesson is concluded with a short multiple choice quiz presented on the desk screens and responded to over the desk controls. (12 minutes)

Objective III

Related Criterion Behaviors - $III_1$, $III_2$, $III_3$, $III_4$, $III_5$, $III_6$

Procedure: Student enters individual carrel, identifies self and program desired, and receives an outline for the lesson (DP). On the screen the student studies an in-depth outline on early classes for the retarded and blind. Auditorily he receives the outline over his earphones simultaneously for three minutes (ie. five presentations of the material). The student next sees an eight-minute closed circuit television lecture describing the major innovations and developments in education of those with learning problems within the 20th century.

The student is then quizzed on the material for the lesson.

If the student is interested in a particular approach as a curriculum innovator, he may request short films and tapes on the subjects. He can also receive a reading list of recommended materials. (15 minutes)

Objective IV and V

Related Criterion Behaviors - $IV_1$, $IV_2$, $IV_3$, $IV_4$; $V_1$, $V_2$, $V_3$, $V_4$, $V_5$

Procedure: The student enters carrel equipped with audio-video receiver and microphone. Identification of student and program desired is made over the microphone which is linked with the computer. As always he immediately receives an outline containing the main points of the lesson and the criterion behaviors (DP). A short film strip on the development and use of assessment scales is presented and immediately followed by a short quiz. This is followed by an audio-video presentation on the causes and extent of the social alarm concerning the retarded in the early 20th century. The major facets of the Jukes and Kallikak studies are presented along with recordings of statements made in that era and a comment by a present-day authority on just what the effect was and the validity of the studies. There is a short quiz on this second presentation. After a short break to study the results of both quizzes the student is given a quiz on all the material on the lesson. (20 minutes)

Objective VI

Related Criterion Behaviors - $VI_1$, $VI_2$, $VI_3$

Procedure: Student enters carrel, identifies himself and desired program, and receives printed outline. The outline is simultaneously presented auditorily and visually (DP). A seven-minute color cartoon of scientific work on learning problems in the 19th and early 20th centuries is presented. Immediately afterward the student is quizzed.

Objectives VII and VIII

Related Criterion Behaviors - $VII_1$, $VII_2$; $VIII_1$, $VIII_2$, $VIII_3$, $VIII_4$

Procedure: Student enters individual carrel and goes through standard operating procedure. He receives the outline (DP). Electing to proceed, he views a five-minute videotape on the development and the power of organized parent and professional groups. This is followed by a short multiple choice quiz.

A second videotape covers the development of interest in the mentally retarded's individuality and the development of diversified services to meet the need.

After a brief pause the student is given a quiz over the entire lesson. (13 minutes)

## Post Test

When the student feels competent enough to pass the post test he may take it even though he has not covered all the lessons. The post test is the same as the pretest in terms of format and of the material covered. The test is administered in individual carrels with the methods of presentation and response being the same as on the pretest. The test is immediately scored enabling the student to receive instant feedback. The student is given a printout of his grade--either pass or fail--and instructions on how to proceed. Students who receive failing grades will be advised as to which areas they are weakest in so that they need not take the entire section over.

SUBELEMENT I (CONTINUED)

Module 2: Knows and comprehends the rationale for educational programming on the basis of the maximization of individual potential

COGNITIVE DOMAIN

Knowledge:

Knows the rationale for educational programming on the basis of the maximization of individual potential.

Comprehension:

Can explain the rationale for educational programming on the basis of the maximization of individual potential.

Application:

Analysis:

Synthesis:

Evaluation:

AFFECTIVE DOMAIN

Receiving:

Appreciates the need for maximizing the individual potential of all people.

Responding:

Accepts the rationale for educational programming on the basis of the maximization of individual potential.

Valuing:

Values the maximization of individual potential as a basis for educational programming.

Organization:

Conceptualizes own rationale for educational programming for the purpose of maximizing the individual's potential.

Characterization:

Educational programming behavior is marked by his concern for maximizing individual potential.

SUBELEMENT I (CONTINUED)

Module 3: Knows and comprehends the rationale for educational programming on the basis of maximization of the potential of a society

COGNITIVE DOMAIN

Knowledge:

Knows the rationale for educational programming on the basis of the maximization of the potential of a society.

Comprehension:

Comprehends the rationale for educational programming on the basis of maximization of the potential of a society.

Application:

Analysis:

Synthesis:

Evaluation:

AFFECTIVE DOMAIN

Receiving:

Aware of the need for maximizing the potential of society and the role of educational programming in achieving that goal.

Responding:

Accepts rationale for educational programming on the basis of maximization of the potential of a society.

Valuing:

Believes in programming educationally to maximize the potential of a society.

Organization:

Conceptualizes own rationale for educational programming for the purpose of maximizing a society's potential.

SUBELEMENT I (CONTINUED)

Module 3: Knows and comprehends the rationale for educational programming on the basis of the maximization of the moral significance of the learner's life

### COGNITIVE DOMAIN

Knowledge:

Knows the rationale for eudcational programming on the basis of maximization of the moral significance of the learner's life

Comprehension:

Explains the rationale for educational programming on the basis of maximization of the moral significance of the learner's life.

Application:

Analysis:

Synthesis:

Evaluation:

### AFFECTIVE DOMAIN

Receiving:

Aware of the moral significance of learner's life and of the rationale for educational programming based on it.

Responding:

Accepts the rationale for educational programming on the basis of maximization of the moral significance of the learner's life.

Valuing:

Believes in the rationale for educational programming on the basis of maximization of the moral significance of the learner's life.

Organization:

Conceptualizes own rationale for educational programming on the basis of the moral significance of the learner's life.

Characterization:

Assumes that every worthwhile educational programming rationale will include maximization of the moral significance of the learner's life.

SUBELEMENT II: Teacher can organize and implement effective learning experiences in terms of appropriate theory for children with severe learning problems

MODULE 1: Has an awareness of the significance of curricular planning for specific severe learning problems.

MODULE 2: Knows developmental patterns for severe learning problem children.

MODULE 3: Knows curricular sequences for severe learning problem children.

MODULE 4: Knows, comprehends and uses theories and principles of learning in planning and implementing teaching learning sequences for children with severe learning problems.

SUBELEMENT II (CONTINUED)

Module 1: Has awareness of the significance of curricular planning for specific severe learning problems.

## COGNITIVE DOMAIN

Knowledge:

Knows that specific learning problems can be remedied through curricular planning aimed at the specific deficit areas.

Comprehension:

Comprehends the significance of curricular planning for specific learning problems.

Application:

Analysis:

Synthesis:

Evaluation:

## AFFECTIVE DOMAIN

Receiving:

Appreciates the need for curricular planning for specific severe learning problems.

Responding:

Accepts the responsibility of planning curriculum for specific severe learning problems.

Valuing:

Values and is committed to planning for specific severe learning problems.

Organization:

Sees the teacher's role as being one of diagnosing student needs and then planning curriculum to meet the specific severe learning problem.

Characterization:

Teaching is marked by individualized programming to meet the specific needs of individual students.

SUBELEMENT II (CONTINUED)

Module 2: Knows developmental patterns for children with severe learning problems

COGNITIVE DOMAIN

Knowledge:

$K_1$ - Knows normal developmental patterns.

$K_2$ - Knows developmental patterns for children with severe learning problems.

Comprehension:

Comprehends the developmental patterns for normal children and children with severe learning problems.

Application:

Uses knowledge of developmental patterns to plan behavioral sequences for children with severe learning problems.

Analysis:

Identifies the major characteristics of developmental patterns in specific severe learning problem cases.

Synthesis:

Constructs and implements unique developmental learning sequences for individual children with severe learning problems.

Evaluation:

Evaluates educational programs in terms of their enhancement of normal and abnormal developmental patterns.

AFFECTIVE DOMAIN

Receiving:

Aware of the differences between normal developmental patterns and developmental patterns for children with severe learning problems.

Responding:

Acquaints self with the developmental patterns of children with severe learning problems.

Valuing:

Values the knowledge of and use of the developmental patterns of children with severe learning problems to meet their specific deficits.

Organization:

Includes developmental patterns for children with severe learning problems within his conceptual framework of the organization and implementation of learning experiences.

Characterization:

Integrates his knowledge and use of the developmental patterns of children with severe learning problems in organizing and implementing learning experiences.

SUBELEMENT II (CONTINUED)

Module 3: Knows curricular sequences for severe learning problem children

COGNITIVE DOMAIN

Knowledge:
Knows the curricular sequences to use in meeting severe learning problems.

Comprehension:
Translates particular curricular sequences into programs designated to meet the needs of sepcific individuals.

Application:
Uses curricular sequences to meet severe learning problems.

Analysis:
Identifies the elements in curricular sequences which make them applicable to specific severe learning problems.

Synthesis:
Produces own curricular sequences to meet the needs evoked by severe learning problems.

Evaluation:
Makes judgments as to the fitness of own and standard curricular sequences to meet the needs evoked by severe learning problems.

AFFECTIVE DOMAIN

Receiving:
Is conscious of the fact that there are curricular sequences designed for use with severe learning problem children.

Responding:
Accepts responsibility for knowing and implementing curricular sequences for severe learning problem children.

Valuing:
Values curricular sequences for children with severe learning problems.

Organization:
Includes curricular sequences for severe learning problem children within his conceptual framework of the organization and implementation of learning experiences.

Characterization:
Integrates his knowledge and use of curricular sequences for severe learning problem children in organizing and implementing learning experiences.

SUBELEMENT II (CONTINUED)

Module 4: Knows, comprehends and uses theories and principles of learning in planning and implementing teaching-learning sequences for children with severe learning problems

## COGNITIVE DOMAIN

**Knowledge:**

$K_1$ - Knows principles of learning.

$K_2$ - Knows steps in planning and implementing teaching-learning sequences.

**Comprehension:**

$C_1$ - Comprehends the principles of learning.

$C_2$ - Understands how to plan and implement teaching-learning sequences using the principles of learning.

**Application:**

Uses theories and principles of learning in planning and implementing teaching-learning sequences.

**Analysis:**

Analyzes the interrelationship between the various principles of learning included in a teaching-learning sequence.

**Synthesis:**

Development of own teaching-learning sequences using those principles of learning that seem most relevant.

**Evaluation:**

$E_1$ - Evaluates his teaching-learning sequences according to the principles of learning.

$E_2$ - Evaluates the worth of principles of learning through research.

## AFFECTIVE DOMAIN

**Receiving:**

Aware of the principles of learning and their use in planning and implementing teaching-learning sequences.

**Responding:**

Accepts the principles of learning as the basis for planning and implementing sequences.

**Valuing:**

Committed to the value of using the principles of learning.

**Organization:**

Includes the principles of learning in his conceptual framework of the preparation and implementation of teaching-learning sequences.

**Characterization:**

Teaching is marked by adherence to the principles of learning.

SUBELEMENT III: Teacher will be able to select, construct, use, and assess educational materials appropriate for use with children with severe learning problems

MODULE 1: Recognizes the value of and the need for effective educational materials.

MODULE 2: Knows how to select and evaluate educational materials for use with children with severe learning problems based on the materials' characteristics and the children's needs.

MODULE 3: Constructs own educational materials appropriate for use with children with severe learning problems.

MODULE 4: Knows techniques for using basic educational materials and uses these materials for teaching children with severe learning problems.

SUBELEMENT III (CONTINUED)

Module 1: Recognizes the value of and the need for effective educational materials.

COGNITIVE DOMAIN

Knowledge:
Knows value of effective educational material.

Comprehension:
Comprehends need for effective educational materials.

Application:

Analysis:

Synthesis:

Evaluation:

AFFECTIVE DOMAIN

Receiving:
Aware of the need for effective educational materials.

Responding:
Acquaints self with need for effective educational materials through observation and individual reading.

Valuing:
Realizes the educational significance of effective materials.

Organization:
Includes effective educational materials in his concept of meaningful learning experiences.

Characterization:

SUBELEMENT III (CONTINUED)

Module 2: Knows how to select and evaluate educational material for use with children with severe learning problems based on the materials' characteristics and the children's needs

COGNITIVE DOMAIN

Knowledge:

$K_1$ - Knows the general types of materials available for use in teaching children with severe learning problems and where to locate such materials.

$K_2$ - Knows the criteria that good educational materials should meet.

Comprehension:

Comprehends the effects of specific types of teaching materials.

Application:

Selects appropriate available materials for a teaching situation.

Analysis:

Analyzes educational materials in terms of what aspects make them effective or ineffective with different learning problems.

Synthesis:

Selects and evaluates educational material in terms of a rationale for learning.

Evaluation:

Is able to make reliable judgments as to the effectiveness of educational materials when selecting them based on the criteria for effective materials.

AFFECTIVE DOMAIN

Receiving:

Is alert to the need for effective selection and evaluation of educational materials.

Responding:

Accepts the selection of effective educational materials as his responsibility.

Valuing:

Commits self to the selection of the best available educational materials.

Organization:

Forms a judgment as to the criteria most relevant in selecting educational material.

Characterization:

Teaching is marked by conscientious selection and evaluation of materials.

SUBELEMENT III (CONTINUED)

Module 3: Constructs own educational materials appropriate for use with children with severe learning problems.

## COGNITIVE DOMAIN

**Knowledge:**
Knows how to use basic implements in constructing educational materials.

**Comprehension:**
Explains how and why certain implements are used in materials construction.

**Application:**
Constructs own educational materials.

**Analysis:**
Identifies the effective and ineffective characteristics of his materials.

**Synthesis:**
Uses knowledge of tools and effective characteristics of materials to develop better materials.

**Evaluation:**
Makes objective judgments as to the effectiveness of his materials.

## AFFECTIVE DOMAIN

**Receiving:**
Is sensitive to the need for teachers to be able to construct their own materials to meet classroom nneds.

**Responding:**
Shows interest in constructing own educational materials.

**Valuing:**
Sees teacher construction of materials as a valued practice.

**Organization:**
Includes role of the teacher as an educational materials producer in his image of the total teacher.

**Characterization:**
Teaching is marked by the inclusion of self made materials.

SUBELEMENT III (CONTINUED)

Module 4: Knows techniques for using basic educational materials and uses these materials for teaching children with severe learning problems

COGNITIVE DOMAIN

Knowledge:
Knows how to use basic educational materials.

Comprehension:
Explains the use of basic educational materials.

Application:
Uses educational materials effectively in teaching children with severe learning problems.

Analysis:
Identifies the elements of the implementation process that cause the material to be effective or ineffective.

Synthesis:
Develops new approaches to the use of educational materials.

Evaluation:
Evaluates effectiveness of different implementation procedures with materials.

AFFECTIVE DOMAIN

Receiving:
Is aware of proper usage of educational materials.

Responding:
Accepts the responsibility for using effective educational materials.

Valuing:
Respects and strives for the most effective use of educational materials.

Organization:
Sees effective use of educational materials as an attribute of a good teacher.

Characterization:
Teaching is marked by effective use of educational materials.

SUBELEMENT IV: The teacher is able to assess the status and subsequent progress of development of children with severe learning problems.

MODULE 1: Knows measurement theory.

MODULE 2: Knows and utilizes the principles of effective test construction when developing systems of assessment.

MODULE 3: Comprehends and uses appropriate techniques and devices for assessing behavior.

MODULE 4: Is able to evaluate results of assessments and use these results to plan a program which will increase the students' learning ability.

SUBELEMENT V: The teacher can communicate with others as an aid to programming for children with severe learning experience.

MODULE 1: Possesses the social and communicative skills to deal successfully with all school connected staff.

MODULE 2: Know basic professional literature in areas related to children with severe learning problems.

MODULE 3: Knows the roles of the professional and non-professional staff that are associated with the child's learning experience.

MODULE 4: Knows how to make effective use of a team approach to solve learning problems.

MODULE 5: Involves all relevant personnel in construction and implementation of programs for children with severe learning problems.

SUBELEMENT VI: The teacher is able to help parents understand and cope with the learning problems of their children.

MODULE 1: Knows counseling theory and interviewing practices.

MODULE 2: Knows available community resources which would aid parents of a child with severe learning problems.

MODULE 3: Knows and understands adult and parent psychology.

MODULE 4: Effectively counsels parents of children with severe learning problems.

SUBELEMENT VII: The teacher helps the student achieve a positive self concept.

MODULE 1: Knows and comprehends child and adolescent psychology.

MODULE 2: Knows and comprehends the psychology of children with learning problems.

MODULE 3: Knows and utilizes teaching situation and techniques designed to improve a student's self image.

MODULE 4: Understands and implements counseling theory and practices with students who have severe learning problems.

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# WISCONSIN

# ELEMENTARY TEACHER EDUCATION PROJECT

## Volume IV: University Facilities

School of Education
University of Wisconsin
Madison, Wisconsin

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# UNIVERSITY FACILITIES

## Volume IV

## INTRODUCTION

The outstanding facilities available on the campus of the University of Wisconsin make it possible to anticipate the successful implementation of the Wisconsin Elementary Teacher Education Project. This volume is designed to provide evidence of the competence of faculty and staff, the nature of research and development activities throughout the campus which can provide support for the development of WETEP, and a description of space facilities in which much of the campus activity will be housed.

The chart presented on the next page indicates the contents of each of the four volumes in the report. A comprehensive understanding of WETEP as it is presently planned requires a knowledge of the content in all volumes. To assist the reader in part with this problem, the Space Facilities report includes an introductory section directed to the assumptions and purposes of WETEP. It is only in the context of the total program plan that an understanding of space facilities specifications will be fully understood.

WETEP has evolved at a time when a new teacher education building ranks high on the State of Wisconsin building priorities list. It is possible, therefore, to consider the implementation of WETEP when facilities specifically designed for individualization of instruction will be available for teacher education at the University of Wisconsin.

| POSITION PAPERS | ELEMENTS | | RESOURCES |
|---|---|---|---|
| Schooling For 1975 | | Curriculum and Instruction | |
| Communication: A Curriculum Focus For WETEP | Screening | Art Education | |
| Teacher Roles For 1975 | Orientation | Health Education | |
| A Cybernetic System For WETEP | | Safety Education | |
| Cognitive and Affective Levels In Teacher Educ. | Educational | Leisure Education | |
| Teacher Education and Curriculum Development | Communications | Guidance | Space Facilities |
| | | Physical Education | |
| New Roles For University Faculty | | | |
| The WETEP Media and Telecommunication System | Mathematics Education | Media and Technology Education | Related Educational Facilities |
| | | Music Education | |
| WETEP as a Research Facility | Science Education | Early Childhood Education | WETEP Faculty |
| Assessment Procedures For WETEP | | | |
| WETEP As An All University Function | Social Studies | Culturally Diverse | |
| The Role Of The School | | | |
| | | Special Education | |
| Index | | | |
| CONTENT OF VOLUME I | CONTENT OF VOLUME II | CONTENT OF VOLUME III | CONTENT OF VOLUME IV |

ORGANIZATION OF PAPERS WHICH DESCRIBE
THE WISCONSIN ELEMENTARY TEACHER EDUCATION PROJECT

# SPACE FACILITIES

Abstract. The program envisioned by the WETEP staff can be effectively implemented only in a specially designed environment. The nature of the individualized program requires a pattern of instructional space quite unlike that found in todays institutions of higher learning.

The Space Facilities have been designed in keeping with the assumptions and the basic purposes underlying the WETEP systems approach to instruction. Every decision relative to space is made to reflect a parallel decision in program planning. A major challenge for the WETEP staff will be to effectively and efficiently progress through the transition period from the present program in present facilities to the totally new program in new facilities.

The WETEP Space Facilities are designed to make possible optimum interdependence among the various elements of the system. Proximity requirements of importance to the respective instructional activities have been given priorities by the staff. The Learning Center is situated so as to serve as the primary point of student participation in the independent instructional activities. Clustered around the Learning Center are the spaces provided for the operations of the instructional elements, including appropriate laboratories, seminar rooms, conference rooms, and faculty offices.

Having less immediate physical proximity--but very close communication proximity--are the facilities for media preparation and utilization, program revision and development, information control and storage, computer services, research and assessment activities, and visitor accommodations.

An essential characteristic of the Space Facilities for WETEP is an excellent and thorough communications system. This system will, first, transmit a great deal of information to learners in settings both for individual and group activities. Second, it will transmit to learners and instructors information about the progress of learners, thus providing the basic management system for WETEP. Third, this system will provide an extensive information network between campus activities and cooperating schools. Fourth, it will provide an information network among staff members in instruction, in development and research, and in administration within the WETEP facilities. And finally, it will make possible a close working relationship with the many associated on-campus facilities.

Any attempt to project needs over a lifetime for a building is difficult. Because WETEP represents a feasibility study, space flexibility is essential. While not offering specific or detailed directions to an architect, this outline of space requirements is expected to foster a creative architectural concept.

## RELATED EDUCATIONAL FACILITIES

Abstract. To develop WETEP into the multifaceted, individualized, computer-managed program which has been envisioned by its authors, the services of many outstanding individuals and facilities on the university campus must be engaged. Cooperative use of the many research and development projects and programs available at the University of Wisconsin will help to insure the emergence of WETEP as the imaginative and effective program which has been projected. A sampling of some of these facilities follows:

Research and Technology Facilities

- University of Wisconsin Computing Center: computing and related services for instruction and research.
- Educational Resources Information Center/Clearinghouse on Educational Facilities: three research units (Cooperative Educational Research and Services, Environmental Design Center, University Facilities Research Center) concerned with educational facilities, sites, buildings, and equipment.
- Wisconsin Research and Development Center for Cognitive Learning: center for the study of conditions and processes of learning and testing of systems and theories.

Media Facilities

- Multimedia Instructional Laboratory: center for the use of automated audiovisual equipment for study of the effects of multiscreen techniques on learning.
- Instructional Research Laboratory-Television: instructional television service for teaching and research purposes.
- Bureau of Audio-Visual Instruction: film library and previewing facilities, curriculum advisory services.
- Instructional Materials Center: study-research laboratory with materials to implement curriculum plans.
- Special Education Instructional Materials Center: center for effective instructional materials in Special Education.

Applied Research Facilities

- Psycho-Educational Clinic: center of research and training in child study.
- Motor Learning Research Laboratory: study of the supportive components of volitional movement.
- Behavioral Cybernetics Laboratory: center for the study of variable feedback effects and the dimensions of cybernetic control.
- Instructional Research Laboratory: center for germinating and supporting basic research projects in education.
    - Synnoetics Laboratory: man-machine adaptation and computer-assisted learning.
    - Basic Skills Laboratory: intensive group investigation of a specific topic, presently, children's reading skills.

Schools and Observation Laboratory Facilities

- Teacher Internship: program providing salaried team teaching experience for students.
- Teacher Placement Bureau: organization facilitating the placement of teachers in the schools.
- Preschool Laboratory: center for the study of the preschool child and training of preschool teachers.

# THE WETEP FACULTY

Abstract. The successful implementation of a teacher education program of the nature and scope of WETEP is primarily dependent upon the competence and commitment of the faculty. Many facets of the University operation will converge to make WETEP a reality, but none compares in importance to the role of the faculty in the conception, development, implementation and maintenance of WETEP. The faculty of the School of Education at the University of Wisconsin is a research and teaching faculty deeply engrossed in the search for increased understanding about learners and learning, about program development and instruction, about schools and teachers, and about teacher education. The competence of the faculty is directly represented in the position papers and in the element specifications of the WETEP report. Indirectly, faculty competence is represented in the vitae which have been prepared. These vitae reflect professional involvement in educational problems both in school practice and in teacher education.

Perhaps the greatest strength of the faculty working within WETEP is evidenced by their successful insistence on an organization of the experimental teacher education program which maintains the integrity of the individual faculty member as he contributes to the total WETEP structure. The high degree of consistency among elements within the program has been maintained with a systems approach which has nonetheless allowed optimum freedom and independence for each faculty group to determine the nature of its contribution both at the planning phase and at the development and implementation phase of the program.

Many faculty and student committees have contributed to the conception of the WETEP specifications. In some instances, these committees served as the writing team for documents which are presented in this report. In other instances, the committees served in a consultant and review capacity to those faculty members who prepared the documents. Others served, as in the case of the Media Committee and the Systems Committee, as consultants to a variety of committees and individuals working on various parts of the report.

The involvement of faculty in many departments and in three colleges of the University has made WETEP a University-wide project. The College of Letters and Science, the College of Agriculture, and the School of Education have all been represented in WETEP planning and as a part of the continuing teacher education program at Wisconsin.

# SPACE FACILITIES

Thomas Barrett, Chairman

Meredith Ames

M. Vere DeVault

Stewart North

# SPACE FACILITIES

## INTRODUCTION

A program such as that envisioned by those who have designed WETEP can be effectively implemented only in an environment far different from any which now exists on the University of Wisconsin campus or perhaps in any School of Education facility on any campus. Encouraged by consultants from university settings, elementary and secondary schools designs have in many instances forged new patterns of instructional space designed to house individualized instructional programs. The nature of the creative individualized program which is WETEP likewise requires a new pattern of instructional space in which such a program can be implemented.

Program planning and the design of space facilities should be parallel activities and the year-long intensive planning for WETEP have made this parallel activity a reality. The space facilities are based on the assumptions and the basic purposes underlying the WETEP systems approach to instruction. Every decision relative to space is made to reflect parallel decision in program planning. Existing facilities cannot house the new program and a major challenge for the WETEP staff will be to effectively and efficiently progress through the transition period from the present program in present facilities to the totally new program in new facilities. Fortunately, at the present time the Teacher Education Building on this campus is high on the list of building priorities. It may be expected that in this biennium or the next, state funds will be allocated for such a building which has for a number of years been very much needed and very much discussed on this campus. It is anticipated that state funds will support the instructional aspect of the facility and inasmuch as WETEP is seen as a continuous center for creative development in Elementary Teacher Education, outside funds will be sought for the development and research portion of the building. That part of the space facility for which outside funding will be sought includes the PROGRAM REVISION AND DEVELOPMENT CENTER, the RESEARCH AND ASSESSMENT CENTER, the TECHNOLOGICAL RESEARCH AND EVALUATION CENTER, and to accommodate the diffusion aspects of WETEP a special facility for forty visitors per day.

### Statement of basic assumptions for WETEP

1. The major need in higher education is the development and maintenance of a humanistic environment for learning* for all students.

---

* The expression "humanistic environment for learning" is meant to connote a personalized environment which requires a close relationship between learners and faculty. It is not meant to imply humanism in the classical sense.

2. The quality of the humanistic environment for learning is dependent upon the nature of faculty-student contacts involved in learning activities.

3. Traditional lecture methods of instruction in higher education do not contribute to the humanistic learning environment in part because faculty-student contacts are rare except in large group instruction.

4. Individualization of instruction and learning can enhance the humanistic quality of educational experiences when personal faculty-student contacts are frequent, comfortable, and meaningful.

5. Personal contact between faculty and students can be focused on more significant aspects of the total learning task when technology is used to provide instructional materials in sequences and strategies appropriate to the readiness and learning style of individual learners.

6. A wide variety of learning experiences should be made readily available to learners in a manner which places major responsibility for an individual's curriculum with that learner.

## Statement of purposes of WETEP

The purposes of WETEP have been identified as:

1. To develop a center for teacher education which will demonstrate the best possible individually oriented elementary teacher education program.

2. To investigate the ways in which increased teacher-student individual relationships can be enhanced through an appropriate and effective utilization of technology.

3. To continually prepare teachers for roles in schools of various kinds and with children of varied cultural backgrounds.

4. To facilitate closer working relationships between schools and universities both in teacher education responsibilities and in public school curriculum development activities.

5. To provide a university environment for in-service education college and university faculty through participation in various aspects of WETEP.

6. To provide a center for the development and evaluation of teacher education materials and facilities.

7. To provide a research facility oriented to the study of a wide spectrum of problems in teacher education.

8. To provide a center for graduate studies in teacher education.

## FUNCTIONS, ACTIVITIES AND SPACE RELATIONSHIPS

The program design for WETEP is such that careful attention has been given the nature of the expected interaction among human and machine aspects of the instructional system. The WETEP concept is designed to facilitate optimum interdependency among the various elements and components of the system. For example, a student undertaking the study of a module from within the EARLY CHILDHOOD EDUCATION element may need to make frequent reference to study material contained in the EDUCATIONAL PSYCHOLOGY element or in one or more of the instructional content elements such as COMMUNICATIONS, SCIENCE, or SOCIAL STUDIES. The instructional system is designed to allow frequent and easy accessibility among the many elements and modules of the WETEP program. The space facilities are designed to accommodate that purpose.

The WETEP committee members in each element have determined the proximity requirements which are of importance to their respective instructional activities. These determinations are summarized in Figure 1. Included in this section are statements of space requirements as they have been developed by members of the various elements in cooperation with the staff in the space facilities committee.

Although there is no intent here to give specific and detailed directions to the architect, we have indicated some suggested arrangement from which we anticipate a creative architectural concept may emerge for the WETEP space facilities. At present it is anticipated that most WETEP activities can be effectively housed on two floors and in three center circles as shown in Figure 2. The first circle will contain the LEARNING CENTER. It will serve as the primary point of student admission to the instructional aspects of WETEP. Situated around the LEARNING CENTER one-half floor up will be most of the First Floor which houses the instructional elements. Suggested elements for inclusion on the First Floor are shown in appropriate arrangement in Figure 3. With each element will be associated appropriate laboratories, seminar rooms, media reception rooms, a conference room and faculty offices, all extending outward from the LEARNING CENTER. These facilities are symbolically diagrammed in Figure 4.

The second floor, it is suggested, will house media preparation and utilization facilities, program revision and development facilities, dial-access control and storage space, computer services, research and assessment activities, and visitors accommodations. A general layout for space organization on the second floor is shown in Figure 5.

KEY

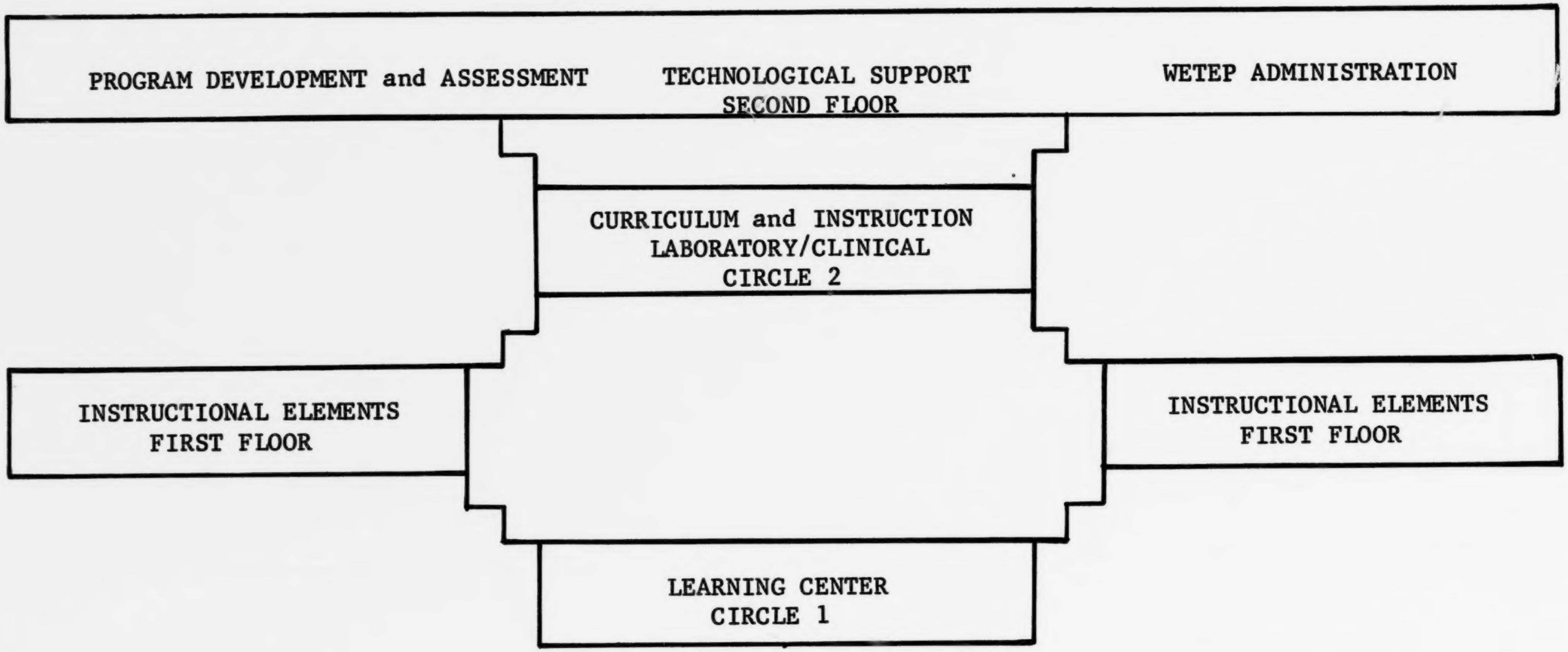
● Required proximity

○ Desirable proximity

| | Communication | Culturally Diverse | Educational Psychology | Early Childhood | Health | Introduction | Learning Center | Mathematics | Safety | Science | Social Studies | Special Education | Student Lounge | Laboratory/Clinical Experiences | Computer Services | Guidance | Curriculum and Instruction | Media Center | Dial Access Storage and Retrieval | Program Revision and Development | Research Assessment | Student Personnel Center | Technological Development | Visitors Reception |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Communication | | | | | | | | | | | | | | | | | | | | | | | | |
| Culturally Diverse | ○ | | | | | | | | | | | | | | | | | | | | | | | |
| Educational Psychology | | ○ | | | | | | | | | | | | | | | | | | | | | | |
| Early Childhood | ○ | ○ | ○ | | | | | | | | | | | | | | | | | | | | | |
| Health | | | | ○ | | | | | | | | | | | | | | | | | | | | |
| Introduction | | | | | | | | | | | | | | | | | | | | | | | | |
| Learning Center | ● | ● | ● | ● | ● | ● | | | | | | | | | | | | | | | | | | |
| Mathematics | | | | | | | ● | | | | | | | | | | | | | | | | | |
| Safety | | | | | ○ | | ● | | | | | | | | | | | | | | | | | |
| Science | | | | | ○ | | ● | ○ | ○ | | | | | | | | | | | | | | | |
| Social Studies | ○ | ○ | | | ○ | | ● | | ○ | | | | | | | | | | | | | | | |
| Special Education | ○ | ○ | ○ | | | | ● | | | | | | | | | | | | | | | | | |
| Student Lounge | | | | | | | ● | | | | | | | | | | | | | | | | | |
| Laboratory/Clinical Experiences | ○ | ● | | | ● | ○ | ● | ○ | ● | | ● | ○ | | | | | | | | | | | | |
| Computer Services | | | | | | | | | | | | | | | | | | | | | | | | |
| Guidance | | | | | | | | | | | | | | ○ | | | | | | | | | | |
| Curriculum and Instruction | | | | | | | | | | | | | | | | | | | | | | | | |
| Media Center | | | | | | | | | | | | | | ○ | | | | | | | | | | |
| Dial Access Storage and Retrieval | | | | | | | | | | | | | | ○ | ● | | | ○ | | | | | | |
| Program Revision and Development | | | | | | | | | | | | | | | ● | | | | | | | | | |
| Research Assessment | | | | | | | | | | | | | | | ● | | | | | | | | | |
| Student Personnel Center | | | | | | | | | | | | | | | | ○ | | | | | | | | |
| Technological Development | | | | | | | | | | | | | | | ● | | | | | | | | | |
| Visitors Reception | | | | | | | | | | | | | | | | | | | | | | | | |
| WETEP Administration | | | | | | | | | | | | | | | ○ | ○ | | | | ● | ● | | ● | ● |

Proximity Requirements of Functional Areas

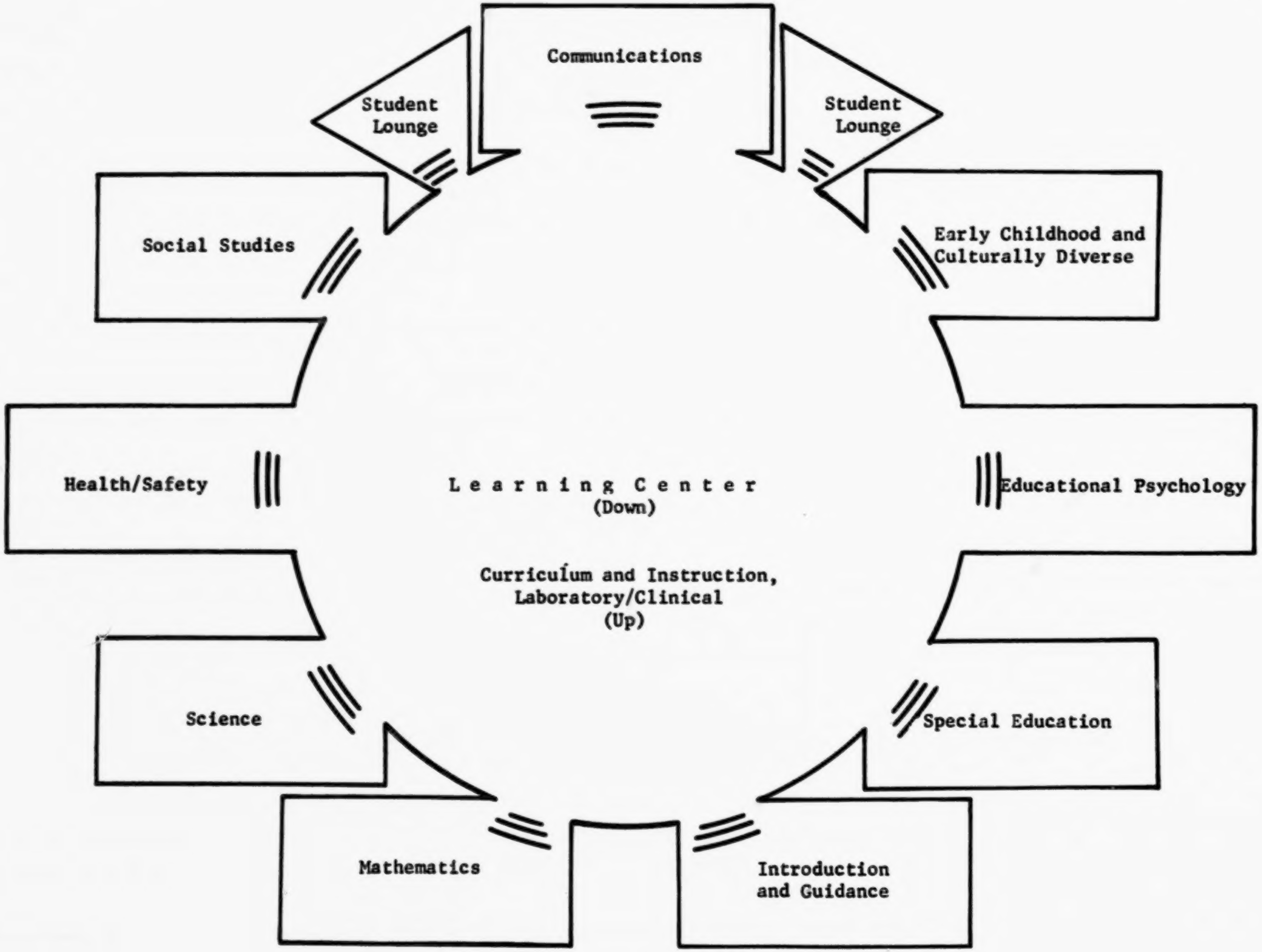
Figure 1


PROGRAM DEVELOPMENT and ASSESSMENT
TECHNOLOGICAL SUPPORT
SECOND FLOOR
WETEP ADMINISTRATION
CURRICULUM and INSTRUCTION
LABORATORY/CLINICAL
CIRCLE 2
INSTRUCTIONAL ELEMENTS
FIRST FLOOR
INSTRUCTIONAL ELEMENTS
FIRST FLOOR
LEARNING CENTER
CIRCLE 1

Vertical Cutaway Showing Arrangement of

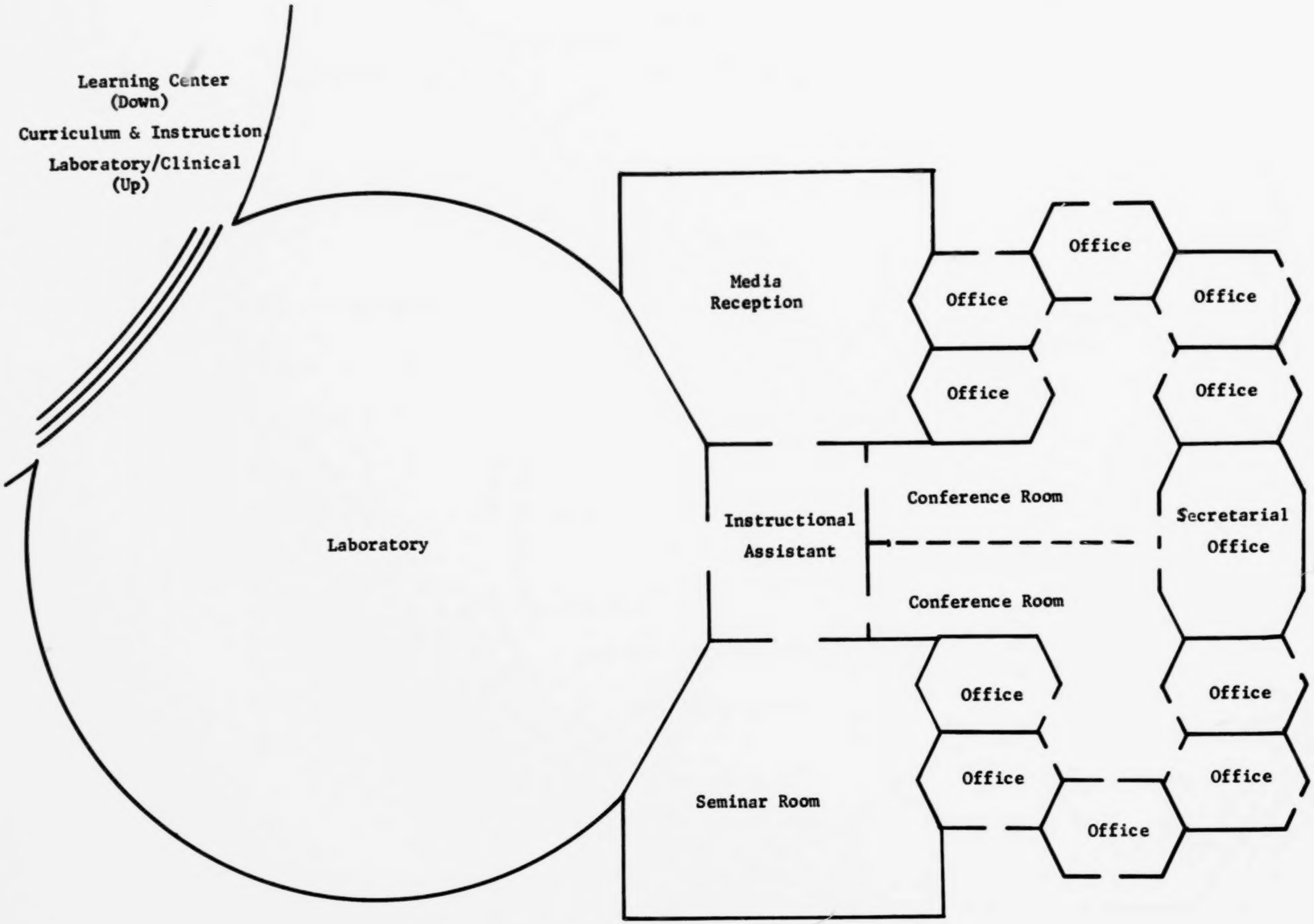
Space by Floors and Circles

Figure 2


Communications
Student Lounge
Student Lounge
Social Studies
Early Childhood and Culturally Diverse
Health/Safety
Learning Center
(Down)
Curriculum and Instruction,
Laboratory/Clinical
(Up)
Educational Psychology
Science
Special Education
Mathematics
Introduction and Guidance

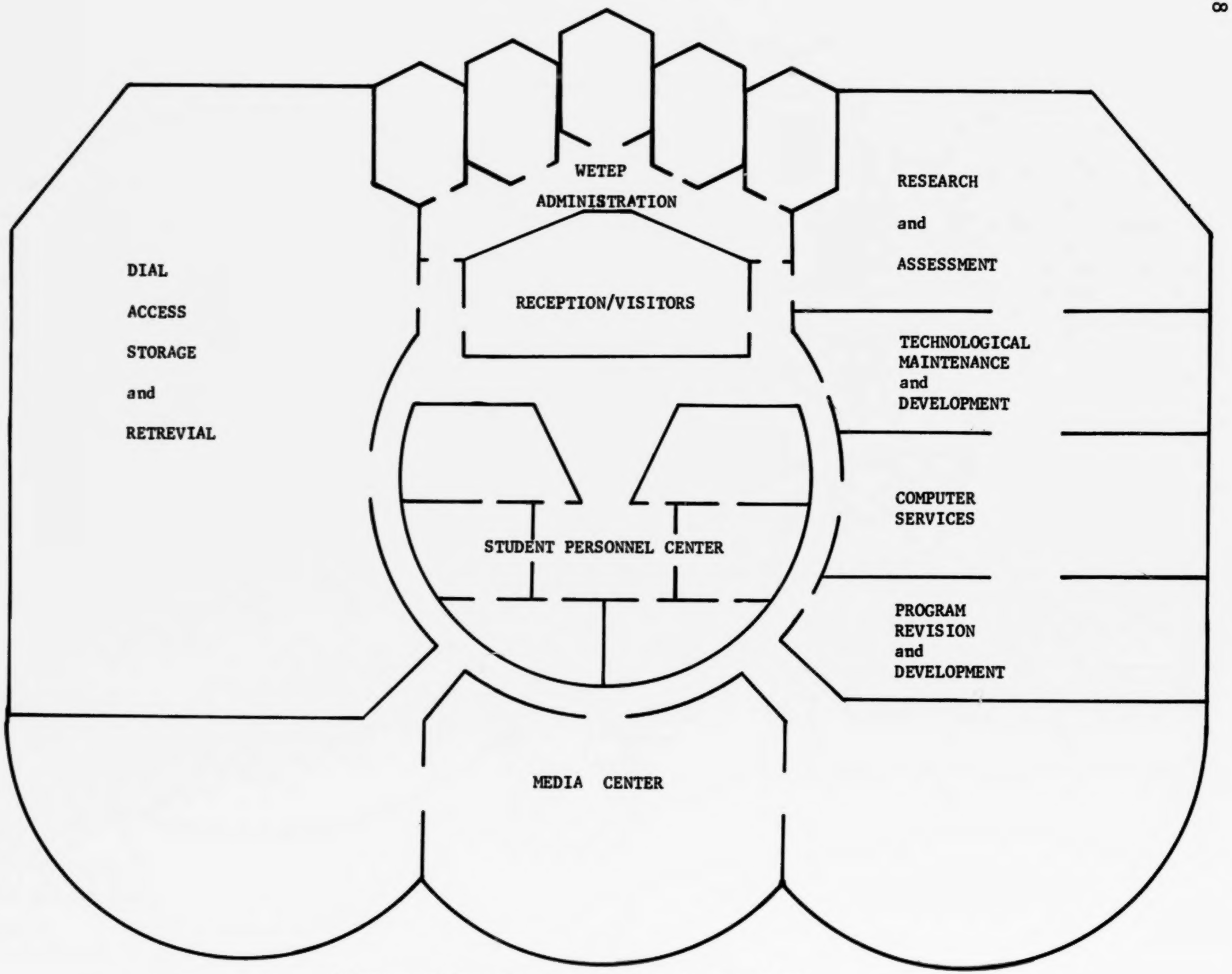
A Suggested Space Organization Plan for the First Floor

Figure 3


Learning Center
(Down)
Curriculum & Instruction
Laboratory/Clinical
(Up)
Laboratory
Media Reception
Instructional Assistant
Seminar Room
Conference Room
Conference Room
Office
Office
Office
Office
Office
Secretarial Office
Office
Office
Office
Office
Office

Illustrative Space Relations For an Instructional Element

Figure 4


WETEP
ADMINISTRATION
RESEARCH
and
ASSESSMENT
DIAL
ACCESS
STORAGE
and
RETREVIAL
RECEPTION/VISITORS
TECHNOLOGICAL
MAINTENANCE
and
DEVELOPMENT
COMPUTER
SERVICES
STUDENT PERSONNEL CENTER
PROGRAM
REVISION
and
DEVELOPMENT
MEDIA CENTER

A Suggested Organization Plan for the Second Floor
Figure 5

CURRICULUM AND INSTRUCTION and LABORATORY/CLINICAL EXPERIENCES will be housed in Circle 2. The WETEP Administrative facilities and the Student Personnel Center will be located in Circle 3. Descriptions of specific space requirements by Circles and Floors follows in the order of Circle 1, First Floor, Circle 2, Second Floor, and Circle 3.

## CIRCLE 1 SPACE REQUIREMENTS

### Space Requirements: LEARNING CENTER (Figure 6)

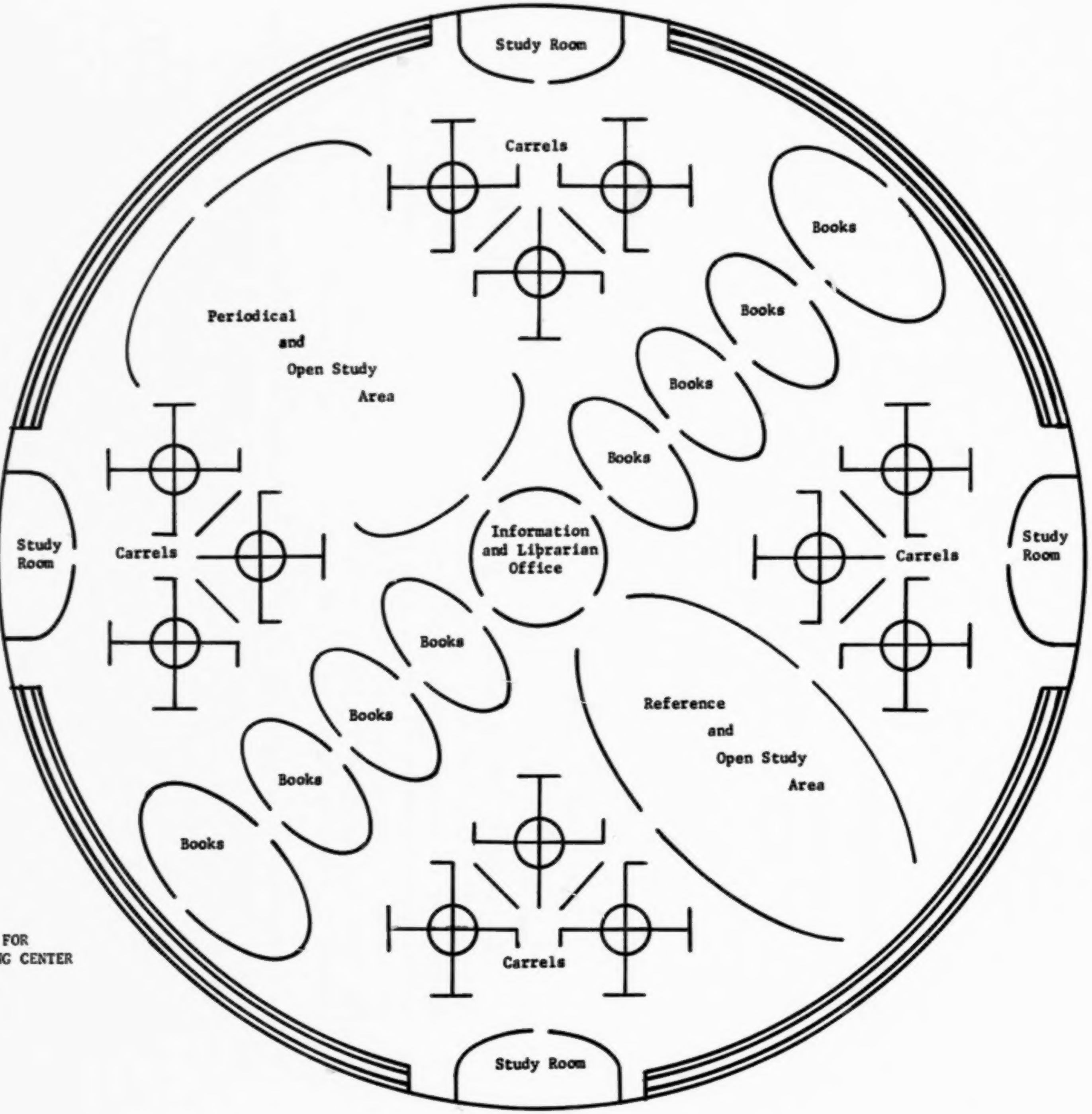
The LEARNING CENTER located on the first floor is the core of the WETEP instructional complex around which many instructional spaces are clustered. Space is provided in the LEARNING CENTER area for the following:

a. Storage of printed and three-dimensional materials on open shelving
b. Individual instructional carrels of a variety of types
c. Circulation desk
d. Study and work space for the librarian and aides
e. Student study tables

The LEARNING CENTER is to be a large open area with most of the WETEP facilities designed for independent and individualized study within its confines. Materials associated with those elements housed on the first floor will be shelved near the appropriate laboratories and in some instances inside the laboratories. Space will be provided for text materials used in the public schools, teachers' guides published by various school districts, and some professional texts.

Fifty individual study carrels of various types will be appropriately spaced, not clustered in a single area, throughout the LEARNING CENTER. Study carrels will be of four types: 1. Those carrels which include full media reception facilities including teletype/CRT terminals and picture-phones; 2. Those carrels which include only teletype facilities; 3. Those carrels which are without reception facilities and are for individual reading or writing activities; and 4. Those specialized carrels which are equipped for specific instructional purposes not at this time specified but which will most likely be directly associated with instruction in the work of a given element and will thus be housed either in the laboratory associated with that element or in the LEARNING CENTER just outside that laboratory.

Student interaction with the computer through various types of terminal devices will be largely for three purposes. The first is that of instruction. The second major use of the computer terminal is for purposes of instructional management. Instructional management involves keeping track of each student's progress through the WETEP system and having readily available to a given student or to faculty


Study Room
Carrels
Books
Periodical
and
Open Study
Area
Books
Books
Books
Study Room
Carrels
Information
and Librarian
Office
Carrels
Study Room
Books
Books
Books
Books
Reference
and
Open Study
Area
Carrels
Study Room

SPACE ARRANGEMENT FOR
LEARNING CENTER

FIGURE 3

for consultation purposes, a wide array of information about the individual student. At the present time, it is difficult to estimate the frequency with which a student will interact with the computer for information concerning his progress, or for direction within a given module of work or for making choices among instructional modules. The third purpose which terminals will serve is that of providing information about the availability of learning resources. The card catalog will be stored in the computer and the retrieval of information about available texts and materials by subject and by author will be readily available. All materials in the LEARNING CENTER and all instructional information sources in WETEP will be indexed in this storage and retrieval system. Those text materials presently housed in the Memorial Library which are of particular relevance to WETEP students will be indexed here. In addition, other university and national information and retrieval systems, such as ERIC and ERIC/CEF will be tied in with WETEP.

The circulation desk will provide check out facilities for texts, three-dimensional materials, and audio tapes and small recording units for student listening outside the WETEP facility. Nearby will be the librarian's office and work space for acquisition, cataloging, and repair of instructional materials. Two aides will be assigned to assist with this work. Space for two consultants will also be provided in this area. One will be an instructional consultant, usually a graduate student on duty for assistance tc WETEP students who are pursuing independent and individualized study, and the other will be a technological systems consultant who will assist in whatever way needed with the utilization of the instructional terminal devices.

Finally, this space will include desks and work tables for individual study. Typewriters will also be provided in individual study space provided for WETEP students.

The LEARNING CENTER will also be the student entrance for the Second Floor. The carpeted open spaces should provide a quiet non-congested air-conditioned environment for study. At the present time, 1968-69, teletype terminals are noisy things and special acoustical treatment would be required for their use in this center. Already available, however, are some absolutely quiet terminals which within the next year or two should make feasible their use in the LEARNING CENTER in large numbers without adding to the noise level of the environment. Hopefully, the same can be accomplished for the typewriter within the near future.

## FIRST FLOOR SPACE REQUIREMENTS

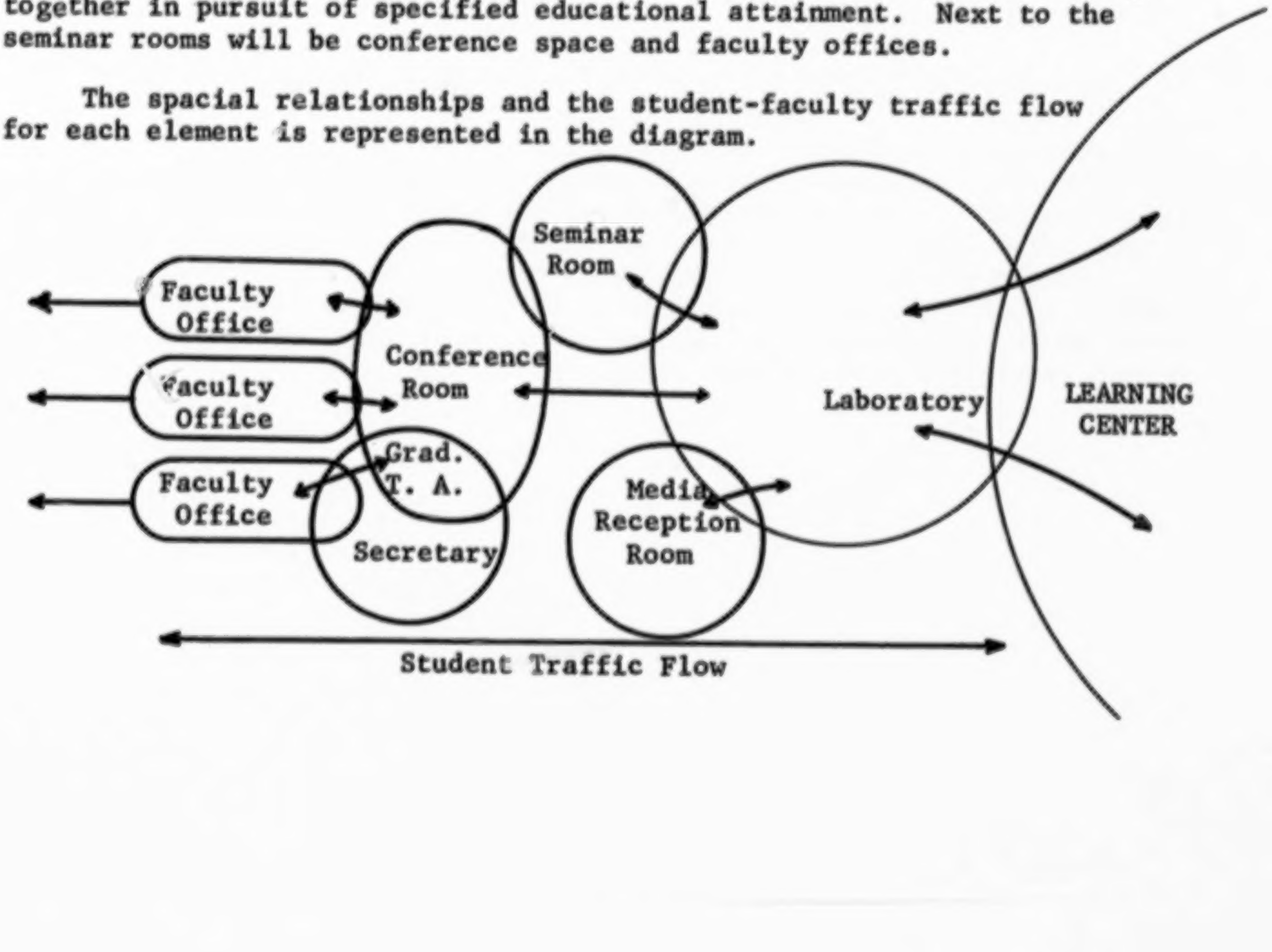
### Space Requirements: INSTRUCTIONAL ELEMENTS

COMMUNICATIONS
SCIENCE
SOCIAL STUDIES
MATHEMATICS
CULTURALLY DIVERSE
GUIDANCE

EARLY CHILDHOOD
SPECIAL EDUCATION
HEALTH
SAFETY
EDUCATIONAL PSYCHOLOGY
INTRODUCTION

The organizational concept for the space requirements is related to the flow of student traffic from entrance to the First Floor at the center of the LEARNING CENTER through various instructional spaces to conference rooms with individual faculty members. Adjacent to the LEARNING CENTER is a laboratory room of appropriate size and appropriately equipped for each element. Instructional materials in the LEARNING CENTER will be arranged in such a way that materials associated with a given element will be shelved near that element. Special laboratory equipment will be found in the laboratory associated with each element. In these laboratories will be storage space for equipment, work space for making instructional aids, table space for exploration of a wide variety of three-dimensional instructional materials and open office and desk space for a laboratory supervisor. Next to the laboratories will be seminar rooms and media reception rooms. The seminar rooms will contain a dial-access monitor which might provide some instructional information relative to seminar group study undertaken in this space. The media reception rooms will be fully equipped to include teletype-audio-video (enlarged) terminals, simulation screens, TV cameras, and picture-phones. These media reception rooms will be used either with faculty directed study groups or with small numbers of students working together in pursuit of specified educational attainment. Next to the seminar rooms will be conference space and faculty offices.

The spacial relationships and the student-faculty traffic flow for each element is represented in the diagram.



Faculty offices will be designed to serve two essential functions. One faculty function is that of counselor and instructor to students at work in the instructional system. The other function is the continuance of his professional scholarship, which may be associated with some aspect of the WETEP instructional systems, but which may be at the professor's choice entirely outside his involvements with WETEP. Thus, each faculty office is designed to open two ways. On the one hand, each office is designed to open onto the conference room in such a manner that his office and the conference room become one when a given professor is on duty as a counselor or instructor to WETEP students. On the other hand, his office opens onto an outside corridor away from the WETEP instructional space so that it might be entered apart from the student approach enabling him to pursue his own independent work in private quarters.

Faculty offices will be equipped with built-in book shelves and filing cabinets, teletype-audio-video terminals and picture-phones. These offices will be linked with the all-University communication and information system. The media terminals are for purposes of reviewing segments of instructional modules for which the professor is responsible and for purposes of developing additional materials in association with the staff at work in the second floor in the Program Revision and Development Center. The picture-phone will provide a connection with project associates working on the development of modules for a given element.

Variations from the standard pattern of laboratory facilities, seminar rooms, and offices occur in the design of some elements because of their uniqueness as compared to those elements which have been described generally in this statement.

Science. The science laboratory is substantially larger than other laboratories and has semi-separate facilities for the biological, earth, and physical sciences. Individual lab stations will be provided and substantial storage space for equipment and supplies will be needed.

Early Childhood. The WETEP facilities will include the laboratory in the Home Economics Department and special communications access to TV facilities in that location will be remotely controlled in the space associated with the EARLY CHILDHOOD element.

Special Education. The new facility for special education in the mental retardation unit will be connected with the WETEP facility through TV facilities remotely controlled in the space provided for the special education element.

Table 1

NUMBER OF OFFICES, SEMINAR ROOMS, AND MEDIA RECEPTION ROOMS PLANNED FOR THE FIRST FLOOR

| Element or Component | Offices | Seminar Rooms | Media Reception Rooms |
|---|---|---|---|
| Introductory | 3 | 1 | 1 |
| Guidance | 2 | | |
| Special Education | 2 | | 1 |
| Educational Psychology | 5 | 1 | 1 |
| Early Childhood | 3 | 1 | 1 |
| Culturally Diverse | 2 | 1 | 1 |
| Communications | 6 | 2 | 1 |
| Social Studies | 3 | 1 | 1 |
| Safety | 1 | 1 | |
| Health | 1 | | 1 |
| Mathematics | 3 | 1 | 1 |
| Science | 3 | 1 | 1 |

## Space Requirements: STUDENT-FACULTY LOUNGES

This unit is intended to provide an informal place, directly accessible to the LEARNING CENTER, where students congregate, refresh with coffee or soft drinks, and otherwise enhance the personal dialogue between faculty and students. It should be relaxing in atmosphere and should promote a feeling of camaraderie and communication. To accommodate the development and maintenance of this environment, the area should be divided into two spaces. One will have tile flooring, will house soft drinks and coffee dispensers, student lockers and other basic equipment. The other will be a more comfortable setting, with carpeting extending from the LEARNING CENTER, comfortable chairs, soft lighting and will be designed to be a visually restful quiet student-faculty center.

Rest room facilities will be adjacent or nearby.

## CIRCLE 2 SPACE REQUIREMENTS

### Space Requirements: CURRICULUM AND INSTRUCTION (Figure 7)

The space requirements for CURRICULUM AND INSTRUCTION are those which will be required for the LABORATORY/CLINICAL and related activities. Office space for seven faculty members with clerical assistants is required. Space for four part-time graduate students as supervisory assistants should be located nearby.

Two Media Reception Rooms will be required for planning of activities and for reviewing of instructional micro-teaching or actual teaching in related WETEP schools. Both Media Reception Rooms will be equipped for playback, instant or delayed, from the two micro-teaching studios adjacent to these rooms, or from public schools where a variety of permanently installed TV cameras can be utilized via remote control facilities. There will be a picture-phone link with participating schools.

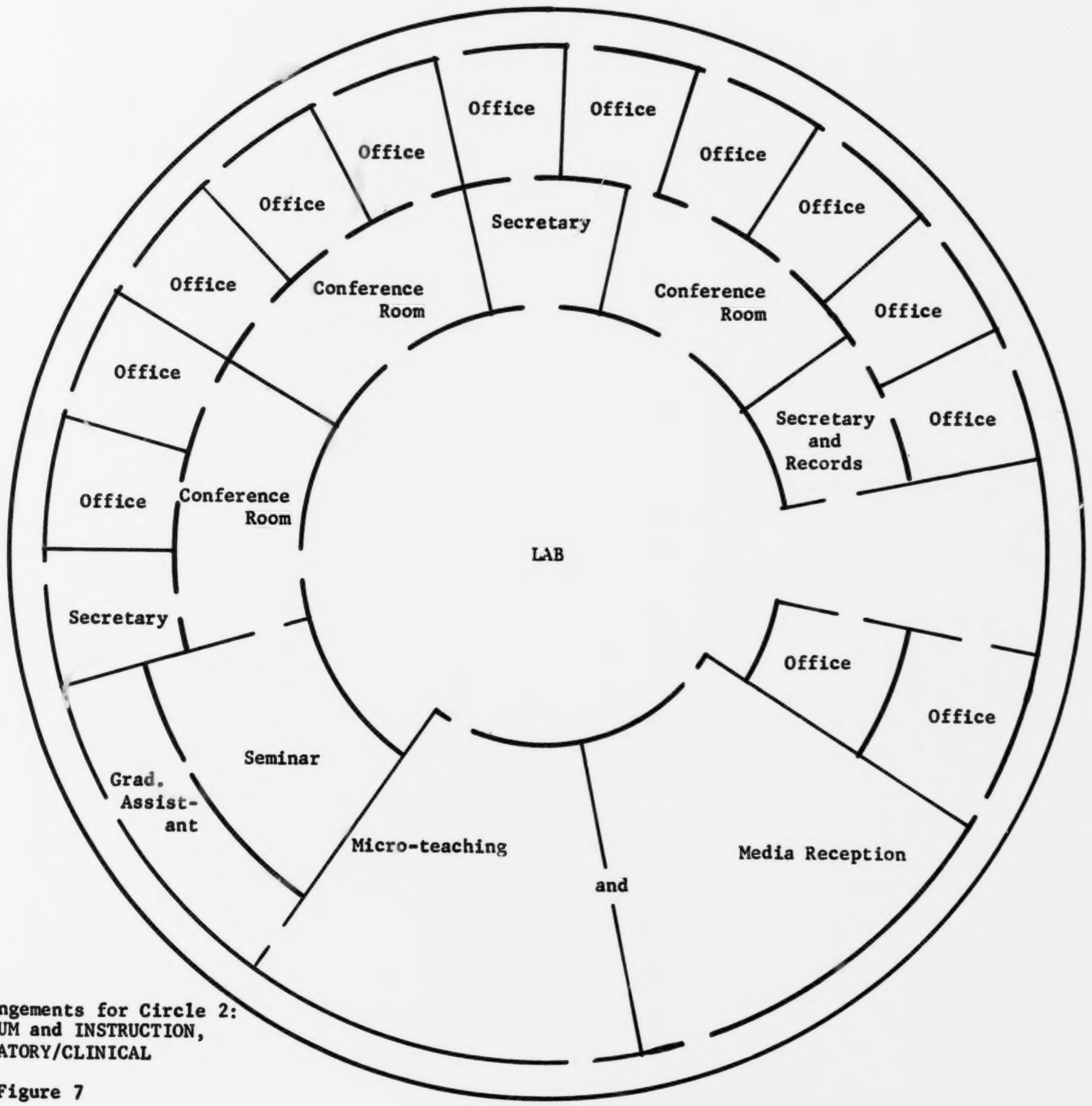
Clerical space will be required for a student Receptionist who will assist with the scheduling of micro-teaching activities and other laboratory experiences associated with the students' work in various instructional modules. An Administrative Coordinator will need an office and a core of three Administrative Assistants to coordinate the placement of interns in appropriate clinical settings. Computer terminals both input and output will provide storage and retrieval facilities for student records.

Space for planning and control of off-campus activities will be coordinated here. Permanent installations and mobile units will be in contact with WETEP through this facility.

## SECOND FLOOR SPACE REQUIREMENTS

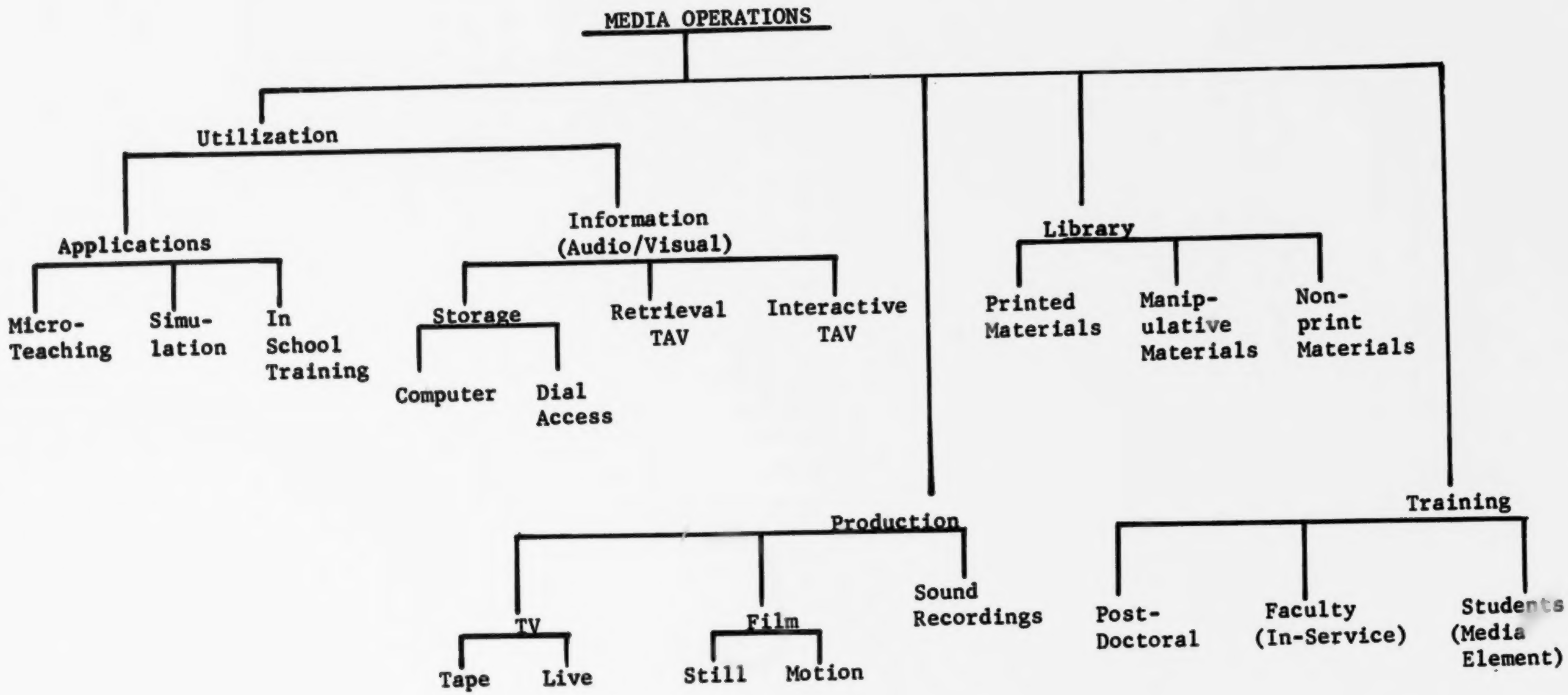
### Space Requirements: MEDIA CENTER

The media aspect of WETEP is a crucial one and requires careful management and coordination. Figure 8 indicates the operations associated with WETEP media. The Director of Media Operations will


Office
Office
Office
Office
Office
Office
Office
Office
Office
Office
Secretary
Conference Room
Conference Room
Conference Room
Secretary and Records
LAB
Secretary
Office
Office
Grad. Assistant
Seminar
Micro-teaching
and
Media Reception

Space Arrangements for Circle 2:
CURRICULUM and INSTRUCTION,
LABORATORY/CLINICAL

Figure 7


MEDIA OPERATIONS
Utilization
Applications
Micro-Teaching
Simulation
In School Training
Information (Audio/Visual)
Storage
Computer
Dial Access
Retrieval TAV
Interactive TAV
Library
Printed Materials
Manipulative Materials
Non-print Materials
Production
TV
Tape
Live
Film
Still
Motion
Sound Recordings
Training
Post-Doctoral
Faculty (In-Service)
Students (Media Element)

Organization for Media Operations

Figure 8

be housed in this center as will the four Coordinators for 1. Utilization, 2. Production, 3. Library, and 4. Training. Office space for each of the four Coordinators should be adjacent to that of the Director of Media Operations and space for two secretarial assistants should also be provided.

Utilization. A variety of media utilities, applications, and techniques is an essential part of WETEP. At the Media Center will be two studios in which micro-teaching activities can be facilitated. Additionally, each of the laboratories, and all other areas where vital display equipment is located, on the first floor will be wired in such a manner that portable television equipment will be plugged in to those rooms for the purpose of doing micro-teaching episodes related to that particular element. This is particularly important when specific materials and equipment are required for the episode. Simulation activities will be the responsibility of the media center but will actually be operational in appropriate seminar rooms provided with large screen projection facilities. In-school viewing will also be managed in this center but will be distributed to appropriate seminar rooms or other output terminals throughout the system.

The utilization section of the media operation will be responsible for technological equipment which provides for information communication in two major respects. First, retrieval systems presently represented, most frequently the dial-access system, will carry sources of both video in film and taped versions and audio materials. Storage management will be a major responsibility of the utilization branch. Computer transmission of information will be provided through both CRT and teletype terminals.

Production. One of the responsibilities for the WETEP media operation is that of the continuous production of material to be utilized in the instructional programs of WETEP. Video production responsibilities will include video tapes, kinescopes, and live utilization of video operations. Studio production will play an important role in WETEP instruction and will include one of the major experimental efforts through explorations in compressed speech and other innovative technology. Film production both for still and in-motion films will be a continuous responsibility of the production division.

Library. The library division will be responsible for printed materials, whether they be in hard copy or micro-copy form. This division will be responsible for the manipulative materials of a general nature and for those associated with the laboratory settings for each of the elements. The library card catalog will be via computer storage and retrieval processes and will include not only the materials in the learning center but also the most directly associated materials housed in the main university library.

Training. Training responsibilities within the media operation will be focused on three populations. The most important training function of this center will be that of training faculty directly responsible for WETEP operations. The philosophies, applications, and techniques of media, production, and utilization will be the central focus of this continuous training program. This in-service effort will be largely a function of the local media operations staff but will be supplemented by post-doctoral study at other appropriate institutions, attendance at instructional systems and media workshops and institutes, and visits to other exemplary media utilization facilities.

WETEP students will become proficient in their understanding of the philosophies, applications, and techniques of media in two ways. First, and perhaps most important, is that the experience of learning in an exemplary media-oriented environment will serve as their best teacher. In addition, however, one of the WETEP elements is a media element dedicated to a well-organized and systematic instructional program in media operations.

The WETEP facility is designed to accommodate 12 to 15 post-doctoral students annually. These students, it is anticipated, will be involved in three aspects of the WETEP program, including instruction, preparation of instructional modules and assessment materials, and in media utilization and production. That portion of their work associated with media will be the responsibility of the Coordinator for Training in Media Operations.

The Coordinator of Media Operations for Training will assume the responsibility for diffusion of the total media operations to visitors and to the educational and technological community through written publications of a variety of texts.

## Space Requirements: Program REVISION AND DEVELOPMENT CENTER

A major aspect of WETEP is the continuous revision of instructional modules and the creation of new modules either to replace older ones proven to be ineffective or to supplement or extend the instructional objectives of the program. The responsibility for the work of the PROGRAM REVISION and DEVELOPMENT CENTER rests entirely with members of the WETEP faculty. In the total WETEP development the two points at which faculty involvement will be greatest are at the point of instruction in individual conferences and seminar groups, and at the point of program development in this center. The fact that faculty members are responsible for this activity means that much of the direction for the PROGRAM REVISION AND DEVELOPMENT CENTER will be located in the faculty offices provided for each of the specific elements of the instructional system. Within each of the major elements, one faculty member will be identified as chairman and, within the REVISION AND DEVELOPMENT CENTER, space will be allocated for his use. Other faculty members within the element will be contributing to program development in a variety of ways and will have direct phonovision communication from their offices to the appropriate development space within the center.

Within this center the specifications for the modules will be planned, including content, and the design of visuals in first draft form. These specifications provide the information needed for media production, for assessment development, and for computer management. Office space will be needed for a Coordinator of the PROGRAM REVISION AND DEVELOPMENT CENTER. His efforts will be directed toward facilitating the work of faculty and staff.

This staff will include the faculty chairman and three half-time graduate students for each of the ten major elements.

The Coordinator will have a staff of clerks for typing and other clerical tasks. His staff will also include artists who will do quick rough draft sketches of ideas as they are being conceptualized, and he will have a staff of systems technicians competent to flow chart completed modules. Space will need to include two artist's easels, four typists desks, two large tables for the work of the systems staff and ample storage space for materials.

## Space Requirements: RESEARCH AND ASSESSMENT CENTER

The research and assessment center is in many respects viewed as the control center for the entire program. Here is the collection point for the data relating to the management system, and the progress of each student as he progresses through the system will be constantly under revision as it becomes available from the computer center. Refinements in output format will be constantly planned and built into the computer system for use by students and faculty.

To facilitate this data processing activity, computer terminal facilities will be required so that this center shall be adjacent to the computer operations of the project. Office space should include facilities for a Coordinator of Research and Assessment, an Assistant for Theoretical Development, and an Assistant for Applied Assessment activities. Providing a link between the applied assessment procedures and each element will be a staff member with special qualifications in the content of that element. Space for each of these twenty half-time graduate assistants each having special qualifications in the content of a given element will be required in this center. Space should be provided for five or six additional personnel associated with each of these two subordinate assessment units. Facilities will also be required for storage of minimal texts and test materials, supplies, and space will be needed for two full-time clerical assistants.

It is also in this section that more specific research studies may be designed and the management of selection of subjects, direction of subjects with WETEP, and the alteration of program modules will be initiated, controlled, and summarized. Most of the research activities will be designed by and will be the responsibility of faculty working in various aspects of WETEP. Therefore, most of the research faculty will have offices elsewhere in the building. Space here will be required for a research design specialist, a statistical consultant, and ten half-time research assistants. Space for two clerical assistants will be required and minimal library and storage space will be needed.

The research facilities of WETEP will be coordinated with the research facilities in the Educational Sciences Unit I building in which is located the Multi-Media Laboratory, the Department of Educational Psychology, and the Wisconsin Research and Development Center for Cognitive Development.

## Space Requirements: COMPUTER SERVICES

This unit will have five major purposes:

1) To accept data necessary for system management;

2a) To compile data bases needed to advise students or assist them in making curriculum decisions;

b) To output management data to students, faculty, and administration, as appropriate;

3) To enable the preparation, editing, and execution of programmed units of instruction;

4) To perform instructional functions in a CAI mode for teacher certification candidates;

5) To provide computational power as needed in connection with course work requiring such assistance (e.g. WIPL or BASIC).

Because most of the relevant information on teacher certification candidates will be maintained in the WETEP facility, a high-speed input-output channel (coaxial cable) should connect the computer in this building with the computer in the central Administration building whose records are also computerized and will offer additional needed information.

The work and operation spaces of the Computer Services should be divided as follows:

1) Control area - available only to the Computer Services staff; central processing unit; magnetic tape units; line printer; disc storage. Office and work space will be provided for a computer operator, for programmers, coders, and technicians. An optical scanner will be operated by a clerk who receives input test answer sheets, for example, and output punched card decks.

2) Student Course-writing area - Student access to the basic machinery (key punches, card sorters, verifiers, card interpreters) must be assured. This area must also offer large work tables for the lay-out and preparation of computer programs.

Terminals will be supplied here for encoding information and debugging programs. (If the terminal is a CRT, a local lighting level control will be needed for turning down lights immediately overhead.)

Test construction and try-out can also be done at terminals. A carrel arrangement or cubicle for one-way observation of examinee during test would be desirable.

Two or three consultants should be provided office space for private consultations with students on individual problems they may be having with the computer.

3) Faculty Course-writing area - A separate faculty area should be provided near the control area, offering the same facilities as are found in the Student Course-writing area: key punches, work tables, terminals, etc.

At least one consultant should also be available to assist professors in their preparation of computer-assisted instruction.

4) Computer-terminals - Interaction with the program will take place at teletype terminals equipped with cathode ray tubes for visual display of information and results. These terminals will be strategically located throughout the learning spaces: about 50 in the Learning Center, and the rest scattered throughout the seminar and conference rooms.

Computer-assisted instruction will require the immediate availability of a relevant multi-media library for student access during a program.

## Space Requirements: DIAL-ACCESS STORAGE AND RETRIEVAL CENTER

The major information transmission source for WETEP is the DIAL-ACCESS STORAGE AND RETRIEVAL CENTER. Office space for a Storage and Retrieval Technician and two technical assistants, one for audio and one for video, will be needed. Four to eight half-time graduate assistants will be required depending on the state of automation of the dial-access facilities. As these become increasingly automated, fewer graduate assistants will be required. A suite of three offices for the Chief Technician and his assistants should be adjacent to clerical space for record keeping, cataloging of acquisitions, and maintenance and management of the computerized indexing of titles.

A control center designed to manage the simultaneous transmission of media from fifty-five sources will be required. The transmission facilities will include twenty-five islands with multiple-source equipment. Ten video only sources will be required and twenty audio transmission sources will be included. Tape duplication facilities will be required for purposes of maintaining ample duplicate copies of materials in keeping with student demand.

Storage space for up to 2500 video tapes or films and for 5000 audio tapes will also be required.

## Space Requirements: TECHNOLOGICAL MAINTENANCE, RESEARCH AND EVALUATION CENTER

Maintenance. The maintenance staff for the technological aspect of WETEP will include a Maintenance Technician and five Technical Assistants. Their responsibility will include both the maintenance of existing equipment and the installation of new technological devices as they are developed or become available for use in WETEP.

The Maintenance Technician's office will require space for storage of catalogs and equipment, supplies, and materials, and a small library of texts related to instructional technology. Storage space will be needed for wiring diagrams for all equipment and for blueprints associated with space and technological installation and maintenance. Space for a secretary inside the office facilities will be required and associated with this facility will be a small conference room for three or four persons. Adjacent to this suite of three offices and separated by sound-proof walls will be workshop space for the six technicians including benches and space for test equipment or stand-alone technological items brought in for repair and maintenance work. Monitors for the various instructional systems will need to be available in the conference room and in the workshop space.

Research and Evaluation of Technological Equipment. As a continually evolving model teacher education program, WETEP will maintain a constant search for improved instructional devices and will respond to the needs which become apparent through the experience of the instructional systems. It is anticipated that many of these needs, even when communicated to commercial organizations, will not be met outside of WETEP and some facility for development of technological innovations will be provided in this center. Three technicians will be employed to direct the efforts of this center. Facilities for testing equipment, workshop environment with appropriate tools, and shop equipment will be needed for both the testing and creation of some technological devices.

## Space Requirements: STUDENT PERSONNEL CENTER

It is in the STUDENT PERSONNEL CENTER that the coordination of student records for permanent and official purposes will be kept. Within WETEP information is gathered on student progress, and is continuously up-dated and made available in the STUDENT PERSONNEL CENTER. The INTRODUCTION component as a part of the initial course work will be responsible for decisions relative to selective admission to WETEP. It is in that component also that information is given the student concerning needed additional work, if any, before admission to WETEP as a teacher education candidate. The assessment information as a part of the continuing feedback portion of the instructional system will also be a source of data about individual students. It is in the STUDENT PERSONNEL CENTER, however, where official records are kept, official information about admission is transmitted to the student, and official information about the university credit earned within WETEP is transmitted to the university registrar and hence to other educational institutions as requested. Special questions coming from outside agencies concerning a student's work with WETEP will be the concern of this office.

Space requirements will include an office for the Advisor for Student Personnel and two full time clerical assistants, one of whom is expert in computer information and retrieval systems and can provide the function of maintaining the computer management of student personnel records. Three counselor/advisors will need private offices in which they meet with students to discuss the nature of their problems related to their entering the introductory course or related to their statements of credit for work completed.

### Space Requirements: RECEPTION/VISITORS

A major purpose of WETEP is to develop a center which demonstrates the continuing development of an exemplary elementary teacher education program. It may be anticipated that a large number of visitors will want to observe WETEP in progress. To facilitate the accommodation of forty visitors per instructional day a special small facility is planned. Space for a receptionist who will handle mail and telephone reservations for visitation and who will meet the visitors on their arrival is needed. A small auditorium to seat forty people will be equipped with the facilities of a Media Reception Room and with teletype facilities of the variety they will observe throughout the WETEP instructional setting. After an initial one or two hour presentation in the auditorium, the visitors will tour the WETEP facilities under the direction of a graduate assistant whose primary responsibility is with the diffusion of information about WETEP.

Although the primary purpose of the auditorium is for the forty visitors, it is anticipated that for occasional meetings of small groups of WETEP students for one purpose or another, the auditorium can serve multiple purposes.

### Space Requirements: WETEP ADMINISTRATION

The administration of WETEP is the responsibility of the total staff involved in the development and/or instructional aspects of the WETEP program. The success of an adventure of the nature of WETEP on a major university campus depends entirely upon the extent to which a large number of faculty members recognize that their own professional contributions are having an impact on the continuing progress of the project. Thus it is anticipated that the Director and Coordinators of WETEP will come from within that WETEP staff and that tenure in these capacities will depend upon: 1) the wishes of the incumbent, and 2) the expressed preferences of the WETEP staff. Much of the administrative responsibility then will be assumed by a large variety of staff members and the central staff will be relatively small in comparison with the size of the operation. The function of the administrative staff will be one of coordination rather than one of direction.

Space requirements include the need for offices for the Director, a Coordinator for Instruction, a Coordinator for Development, and a Business Manager. Appropriate secretarial assistance will include a secretary for the Director, each Coordinator, and the Business Manager. Space for an Administrative Assistant to the Director and one to each of the Coordinators will be required. The Business Manager will need space for an Assistant for the Budget and for an Assistant for Administrative Relations with Local Schools.

Because of the involvement of a large number of faculty members in the management of WETEP, a Conference Room with a capacity for twenty-five to thirty-five faculty members is required.

## SPECIAL CONSIDERATIONS

### Space Requirement for Flexibility, Climate Control and Acoustical Treatment and Lighting

WETEP is an experimental teacher education project. Projections of what the future for higher education will be varies widely.[1] Any attempt to project needs over a lifetime for a building is difficult at best. WETEP represents a feasibility study in many aspects and thus the flexibility of WETEP space is essential. The First Floor space requirements represent a point at which flexibility should be especially emphasized. It can be readily assumed that faculty offices, such as those suggested on the periphery of this floor, will be required for as long as the building stands and these may be permanently established. The LEARNING CENTER, too, will probably remain a requirement in a teacher education building for the next several decades. The size, use and number of Seminar Rooms, Media Reception Rooms and Laboratories, however, may change as WETEP progress and these spaces should be planned for maximum flexibility.

Climate control throughout the building will be required to maintain appropriate environment for equipment but should also be carefully considered in terms of staff and students at work in small seminar rooms and learning carrels without access to outside walls and windows.

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[1] See: Alvin C. Eurich, Campus 1980. New York: Delacorte Press, 1968, 327 pp.

An acoustical treatment of floors, ceiling, and walls, is required in the open learning areas as in the LEARNING CENTER and Laboratories and is preferred throughout the building. A second location where this is particularly necessary is in the area of the Second Floor where computer and media production areas facilities are located and on the Second Circle where micro-teaching studios will be in use.

The extensive use of a variety of media screens in simulation, in TV monitors, CRT terminals, and art work spaces will require special light adjustment features.

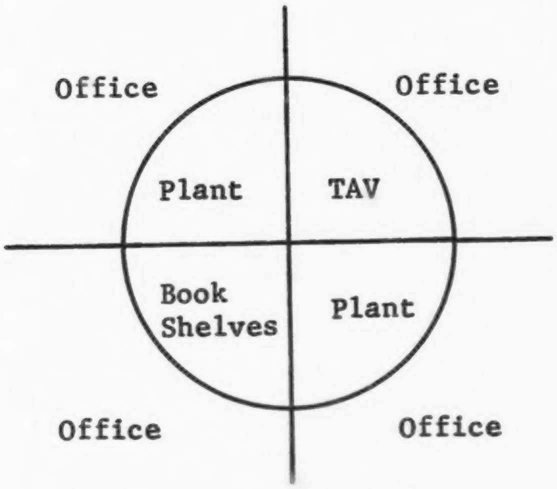
## The Communications System

An essential characteristic of the space facilities for WETEP is an excellent and thorough communications system, which needs to serve a variety of purposes:

1) it transmits a great deal of instruction to learners both as individuals and in small groups;
2) it transmits to learners and instructors information about learner progress, thus providing the basic management system for WETEP;
3) it provides an extensive information network between the instructional and administrative setting on campus and the WETEP participating schools;
4) it provides the information network among staff members in instruction, in development and research, and in administration within the WETEP facilities;
5) it makes possible a close working relationship with other on-campus facilities such as those housed in the Educational Sciences Building I.

The terminal facilities designed to accomplish these objectives include TAV, TAVe, and the FTB.

TAV. One of the standard technological devices in the building is an output terminal capable of transmitting information received from the computer (on teletype and visually) and from the information center (visually and aurally). A common tube will act as both the computer visual display device and as the information retrieval color television monitor. This Teletype-Audio-Video terminal is referred to as a TAV and will include a silent keyboard, a telephone selector panel, a TV camera, stereophonic headphones, and a microphone. TAV's will be located in the LEARNING CENTER for individual study, in individual faculty offices, conference rooms, work centers, and in participating schools.



Rotating
Flexible
Terminal
Base (FTB)

TAVe. TAV facilities with larger visual display screens than those needed in offices or study carrels are planned for Media Reception Rooms. They will be referred to as TAVe's.

FTB. Where it seems appropriate that adjacent spaces share a single TAV, such as in the Learning Center or in clustered office spaces, Flexible Terminal Bases are proposed as illustrated in the diagram. These rotating pads will make it possible to call a TAV into service when needed, thus allowing for its maximum utilization. It is possible to include one, two, three, or four TAV's on a single FTB as extent of use indicates.

For the purpose of eliminating multiple office space for a single faculty member who assumes instructional and development responsibilities a network of Bell Telephone picture-phone facilities is planned. This network will extend throughout the building, to campus buildings directly related to the activities of WETEP and to cooperating schools and mobile units.

## Proximity of Other University Departments and Facilities

WETEP activities will be enhanced through the appropriate relationship with a number of departments and facilities which directly or indirectly affect WETEP or may be affected by WETEP. The following departments and facilities will be housed either in the same building with the WETEP facilities or in an adjacent building.

### Curriculum and Instruction: Secondary Education

The faculty responsible for the development and instructional operation of many of the elements are related to faculty and instructional and research programs in secondary education. It is essential that these related faculty offices are located in the same building with WETEP and are positioned in close approximation to the elementary education counterpart faculty.

### Educational Policy Studies

Many WETEP elements are planned to be dependent on course work in the Department of Educational Policy Studies. Especially for students in SOCIAL STUDIES, in the CULTURALLY DIVERSE, and for those whose specialized interests emphasize aspects of Educational foundations other than educational psychology, EPS classes and faculty located in the same building with WETEP would provide a distinct advantage.

## Auditorium

The only WETEP component which utilizes the auditorium is within the INTRODUCTION Component. Although frequent use of the auditorium is not anticipated, an auditorium with a seating capacity of approximately 200 students should be located in the WETEP building.

## Teacher Placement

Teacher placement records will be much more complete in WETEP than is presently the case. A close relationship with the source of these data and in a location readily available to WETEP students is preferable. Although not planned as a part of the WETEP facility, these offices should be located in the same building or complex of buildings.

## School of Education Administrative Offices

The undergraduate program is the responsibility of no single department or set of departments but rather it is the responsibility of the Dean's office of the School of Education. If that responsibility is to be assumed, either an Associate Dean of the School of Education or the entire Administrative Staff of the Dean's office should be housed in the building with undergraduate programs including WETEP.

## FOOTAGE AND EQUIPMENT REQUIREMENTS

### LEARNING CENTER

The LEARNING CENTER is designed to accommodate the independent study needs of 600 students. There should be an atmosphere of openness throughout. Air conditioning and carpeting will aid in acoustical control. Other environmental conditions, such as lighting, will be similarly controlled.

| | The LEARNING CENTER will include nine kinds of spaces: | Sq. ft. |
|---|---|---|
| 1. | Shelving for printed and three-dimensional materials (4½ ft. isles). | 1,600 |
| 2. | Twelve Flexible Terminal Bases (FTB)*: 48 individual instructional carrels, equipped with teletype and audio and visual terminals (TAV)* (4 ft. x 5 ft.) | 960 |
| 3. | Twenty-five individual dry study carrels for reading, typing. (4 ft. x 4 ft.) | 400 |
| 4. | Five study tables to accommodate 6 students each. (8 ft. x 4 ft.) | 160 |
| 5. | Circulation desk area. | 160 |
| 6. | Private study room for one Librarian (with Picturephone). | 120 |
| 7. | Work space for two Library Aides to help with the acquisition, cataloging, and repair of instructional materials. Storage space for supplies. | 240 |
| 8. | Desk for Instructional Consultant, on duty to assist students in individualized programs. | 90 |
| 9. | Desk for Technological Systems Consultant to assist with the use of the computer terminals. | 90 |
| | | 3,820 |

### EQUIPMENT

| General | | Special | |
|---|---|---|---|
| 5 | Study tables | 12 | Flexible Terminal Bases (FTB) |
| 30 | Chairs for use at tables | 48 | Dial-access monitors |

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* TAV's, TAVe's and FTB's are described on pages 36 and 37.

| | General | | Special |
|---|---|---|---|
| | 3,200 ft. shelving for printed and 3-D materials, audio tapes, small recorders | 48 | Computer terminals |
| | | 10 | Typewriters (5 manual, 5 electric) |
| 48 | Visual-display carrels (FTB) | | |
| 48 | Chairs for use at FTB carrels | | |
| 25 | Dry carrels | | |
| 25 | Chairs for use at Dry carrels | | |
| 1 | Circulation desk | | |
| 4 | Stools | | |
| 1 | Desk - Librarian | | |
| 2 | Chairs | 2 | Typewriters (electric |
| 1 | Work table | 1 | Picture-phone |
| | 400 ft. shelving | | |
| 1 | Table - Library Aides | | |
| 2 | Chairs | | |
| | 250 ft. shelving | | |
| 1 | Desk - Instructional Consultant | | |
| 2 | Chairs | | |
| 1 | Desk - Computer Consultant | | |
| 2 | Chairs | | |

## INSTRUCTIONAL ELEMENTS

Within the space required for the elements are Laboratories, Seminar Rooms, Media Reception Rooms, Student-Faculty Conference Rooms, Faculty Offices and Secretarial offices. Rather than describe these in detail as they are listed for each element, a generalized description is presented here for each kind of space. For those elements in which the space requirements differ substantially from that described here, more detailed specifications will be provided.

Laboratories. Laboratory space will be adjacent to the LEARNING CENTER and in some ways will be an extension of that center into the specific element work-study area. Space will be provided for the study of particular instructional materials, for the construction of teaching aids, and in some instances for practice in the utilization of particular instructional materials. Storage space for materials will be required and ample work space on tables will be needed. Space for a laboratory supervisor will include a desk, chairs, filing cabinets, shelving and storage cabinets.

Seminar Rooms. Seminar Rooms for groups of from 8 to 12 persons will be equipped with tables and chairs and teletype-audio-video terminal facilities with an enlarged output monitor (TAVe). A picture-phone is also included.

Media Reception Rooms. Facilities in the Media Reception Rooms include the TAVe found in the Seminar Rooms but, in addition, these rooms have large screens for the reception of simulation films and TV cameras to record student responses for evaluation. They also include a picture-phone.

Student-Faculty Conference Room. The conference rooms provide space for a continuous instructional guidance facility for students. Within the major elements, it is anticipated that a faculty member will be on duty during most of the daytime hours for individual conferencing with students. The space is located next to faculty offices so that each office, in turn, may be opened to the conference space. The Conference Room should provide a quiet and private space in an environment designed to promote a relaxed approach to the discussion of personal instructional problems.

Faculty Offices. Each office is designed to open two ways. In one direction the office opens toward the student instructional activity in the direction of the Conference Room, the Seminar Rooms and the LEARNING CENTER. In the other direction, the offices open onto outside corridors which take the faculty member away from instructional responsibilities, and thus other facilities and staff are readily available. Each office includes the usual office equipment plus picture-phone and a Flexible Terminal Base (FTB) on which a professor shares with other adjacent faculty offices an interchangeable teletype-audio-video terminal (TAV).

Secretarial Offices. Secretarial space will be adjacent to faculty offices and to the Faculty-Student Conference rooms. Equipment will include the usual facilities plus the picture-phone.

## SCIENCE AREA

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Laboratory. A large room with the flexibility to make a number of small rooms for a variety of instructional purposes. Gas, water, sewer, and electricity should be located on the perimeter of the large room, which should have free standing movable laboratory tables for maximum flexibility of room use by individuals and groups. The laboratory should be so designed that groups of up to 12 students can meet in seminar fashion around the demonstration table. Facilities for animal and plant care should be provided, equipped with temperature, humidity, odor, and light control. | 1,600 |
| 2. | Office space for Laboratory Supervisor | 120 |
| 3. | Two storeroom-preparation rooms @ 400 sq. ft. serviced with the gas, water, sewer, and electricity. Each should be equipped with a large preparation table and sink. To protect the health of the workers and to protect the metal apparatus, both store rooms should be furnished with strong positive exhaust systems, for odor control and removal of chemical vapors. | 800 |
| 4. | Sound-proof workshop | 400 |
| 5. | One seminar room serviced with gas, water, sewer | 250 |
| 6. | Media reception room | 250 |
| 7. | Student-faculty conference room | 120 |
| 8. | Three faculty offices @120 sq. ft. | 360 |
| 9. | Office for one secretary | 120 |
| | | 4,020 |

Equipment requirements include:

| General | Special |
|---|---|
| Laboratory | |
| 1 Laboratory demonstration table with sink | 1 TAV |
| 20 Free standing flat tables | 1 Picture-phone |
| 40 Chairs | 10 Animal cages |
| 9 Large storage cabinets | 25 Planters |
| | Gas, water, sewer |
| Laboratory Supervisor's Office | |
| 1 Desk | |
| 2 Chairs | |
| Shelving | |
| Storage space | |
| 2 Filing cabinets | |
| Two Storeroom-Preparation Rooms | |
| 2 Large preparation tables with sinks | Exhaust system |
| 10 Stools | Gas, water, sewer |
| Large storage cabinets | |

| General | | Special |
|---|---|---|
| 2 Work benches<br>3 Stools | Sound-proof Workshop | Hand and power tools |
| 1 Demonstration table with sink<br>12 Chairs | One Seminar Room | Gas, water, sewer<br>1 TAVe<br>1 Picture-phone |
| 1 Table to seat 12<br>12 Chairs | One Media Reception Room | Large screen for simulation<br>1 TAVe<br>1 Picture-phone |
| 4 Comfortable chairs<br>1 Low coffee table<br>Book shelves | Conference Room | 1 TAV |
| 3 Faculty desks<br>3 Faculty desk chairs<br>6 Visitors chairs<br>12 File cabinets, built-in Shelving | Three Faculty Offices | 1 FTB with TAV availability in three offices<br>3 Picture-phones |
| 1 Secretary desk<br>1 Secretary chair<br>1 Visitor's chair<br>1 File cabinet | Secretarial Office | 1 Typewriter, electric<br>1 Picture-phone |

COMMUNICATIONS AREA

Space requirements include:

|  |  | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 560 |
| 2. | Two Seminar Rooms @ 200 sq. ft. | 400 |
| 3. | One Media Reception Room | 250 |
| 4. | Student-Faculty Conference Room | 120 |
| 5. | Six Faculty Offices | 720 |
| 6. | Secretarial office for two secretaries | 180 |
|  |  | 2,230 |

Equipment requirements include:

| General |  | Special |
|---|---|---|
| 3 Work tables<br>6 Stools<br>3 Large storage cabinets | Laboratory | 1 Picture-phone<br>1 TAV |
| 1 Desk<br>2 Chairs<br>Shelving<br>Storage space<br>2 Filing cabinets | Laboratory Supervisor's Office |  |
| 2 Tables to seat 12<br>24 Chairs | Two Seminar Rooms | 2 TAVe<br>2 Picture-phones |
| 1 Table to seat 12<br>12 Chairs | Media Reception Room | Large screen for simulation<br>TAVe<br>1 Picture-phone |
| 3 Comfortable chairs<br>1 Low coffee table<br>Book shelves | Conference Room | TAV |
| 6 Faculty desks<br>6 Faculty desk chairs<br>12 Visitors chairs<br>24 File cabinets, built in<br>Shelving | Six Faculty Offices | 2 FTB with TAV availability in 6 offices<br>6 Picture-phones |
| 2 Secretary desks<br>2 Secretary chairs<br>2 Visitors' chairs<br>2 File cabinets | Secretarial Offices | 2 Typewriters, electric<br>1 Picture-phone |

## SOCIAL STUDIES AREA

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 400 |
| 2. | One Seminar Room | 200 |
| 3. | Media Reception Room | 250 |
| 4. | Student-Faculty Conference Room | 120 |
| 5. | Three Faculty Offices | 360 |
| 6. | Secretarial space for one secretary | 120 |
| | | 1,450 |

Equipment requirements include:

| | General | Special |
|---|---|---|
| Laboratory | 3 Work tables<br>9 Stools<br>3 Large storage cabinets | 1 Picture-phone<br>1 TAV |
| Laboratory Supervisor's Office | 1 Desk<br>2 Chairs<br>Shelving<br>Storage space<br>2 Filing cabinets | |
| One Seminar Room | 1 Table to seat 12<br>12 Chairs | 1 TAVe<br>1 Picture-phone |
| Media Reception Room | 1 Table to seat 12<br>12 Chairs | Large screen for simulation<br>1 TAVe<br>1 Picture-phone |
| Conference Room | 3 Comfortable chairs<br>1 Low coffee table<br>Book shelves | 1 TAV |
| Three Faculty Offices | 3 Faculty desks<br>3 Faculty desk chairs<br>6 Visitors' chairs<br>12 File cabinets, built-in<br>Shelving | 1 FTB with TAV availability in three offices<br>3 Picture-phones |
| Secretarial Office | 1 Secretary desk<br>1 Secretary chair<br>2 Visitors' chair<br>2 File cabinets | 1 Typewriter, electric<br>1 Picture-phone |

## MATHEMATICS AREA

| Space requirements include: | Sq. Ft. |
|---|---|
| 1. Laboratory | 400 |
| 2. One Seminar Room | 200 |
| 3. One Media Reception Room | 250 |
| 4. Student-Faculty Conference Room | 120 |
| 5. Three Faculty Offices | 360 |
| 6. Secretarial space for one secretary | 120 |
| | 1,450 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Laboratory | |
| 3 Work tables<br>9 Stools<br>3 Large storage cabinets | | 1 Picture-phone<br>1 TAV |
| | Laboratory Supervisor's Offices | |
| 1 Desk<br>2 Chairs<br>Shelving<br>Storage space<br>2 Filing cabinets | | |
| | One Seminar Room | |
| 1 Table to seat 12<br>12 Chairs | | 1 TAVe<br>1 Picture-phone |
| | Media Reception Room | |
| 1 Table to seat 12<br>12 Chairs | | Large screen for simulation<br>1 TAVe<br>1 Picture-phone |
| | Conference Room | |
| 3 Comfortable chairs<br>1 Low coffee table<br>Book shelves | | 1 TAV |
| | Three Faculty Offices | |
| 3 Faculty desks<br>3 Faculty desk chairs<br>6 Visitors' chairs<br>12 File cabinets, built-in<br>Shelving | | 1 FTB with TAV availability in three offices |
| | Secretarial Office | |
| 1 Secretary desk<br>1 Secretary chair<br>2 Visitors' chairs<br>2 File cabinets | | 1 Typewriter, electric<br>1 Picture-phone |

## CULTURALLY DIVERSE AREA

Space requirements include:

|  | Space | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 400 |
| 2. | One Seminar Room | 200 |
| 3. | Media Reception Room | 250 |
| 4. | Student-Faculty Conference Room | 120 |
| 5. | Two Faculty Offices | 240 |
| 6. | Secretarial space for one secretary | 120 |
|  |  | 1,330 |

Equipment requirements include:

### Laboratory

| General | Special |
|---|---|
| 2 Work tables | 1 Picture-phone |
| 6 Stools | 1 TAV |
| 2 Large storage cabinets |  |

### Laboratory Supervisor's Office

| General | Special |
|---|---|
| 1 Desk |  |
| 2 Chairs |  |
| Shelving |  |
| Storage space |  |
| 2 Filing cabinets |  |

### One Seminar Room

| General | Special |
|---|---|
| 1 Table to seat 12 | 1 TAVe |
| 12 Chairs | 1 Picture-phone |

### Media Reception Room

| General | Special |
|---|---|
| 1 Table to seat 12 | 1 Large screen for simulation |
| 12 Chairs | 1 TAVe |
|  | 1 Picture-phone |

### Conference Room

| General | Special |
|---|---|
| 3 Comfortable chairs | 1 TAV |
| 1 Low coffee table |  |
| Book shelves |  |

### Two Faculty Offices

| General | Special |
|---|---|
| 2 Faculty desks | 1 FTB with TAV availability in two offices |
| 2 Faculty desk chairs | 2 Picture-phones |
| 4 Visitors' chairs |  |
| 6 File cabinets, built-in Shelving |  |

### Secretarial Office

| General | Special |
|---|---|
| 1 Secretary desk | 1 Typewriter, electric |
| 1 Secretary chair | 1 Picture-phone |
| 2 Visitors' chairs |  |
| 2 File cabinets |  |

## GUIDANCE AREA

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 400 |
| 2. | Media Reception Room | 250 |
| 3. | Student-Faculty Conference Room | 120 |
| 4. | Two Faculty Offices | 240 |
| 5. | Secretarial space for one secretary | 120 |
| | | 1,130 |

Equipment requirements include:

| General | Special |
|---|---|
| **Laboratory** | |
| 2 Work tables | 1 Picture-phone |
| 6 Stools | 1 TAV |
| 2 Large storage cabinets | |
| **Laboratory Supervisor's Office** | |
| 1 Desk | |
| 2 Chairs | |
| Shelving | |
| Storage space | |
| 2 Filing cabinets | |
| **Media Reception Room** | |
| 1 Table to seat 12 | Large screen for simulation |
| 12 Chairs | 1 TAVe |
| | 1 Picture-phone |
| **Conference Room** | |
| 3 Comfortable chairs | 1 TAV |
| 1 Low coffee table | |
| Book shelves | |
| **Two Faculty Offices** | |
| 2 Faculty desks | 1 FTB with TAB availability in two offices |
| 2 Faculty desk chairs | 2 Picture-phones |
| 4 Visitors' chairs | |
| 6 File cabinets, built-in | |
| Shelving | |
| **Secretarial Office** | |
| 1 Secretary desk | 1 Typewriter, electric |
| 1 Secretary chair | 1 Picture-phone |
| 2 Visitors' chairs | |
| 2 File cabinets | |

## EARLY CHILDHOOD AREA

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 400 |
| 2. | One Seminar Room | 200 |
| 3. | Media Reception Room | 250 |
| 4. | Student-Faculty Conference Room | 120 |
| 5. | Three Faculty Offices | 360 |
| 6. | Secretarial space for one secretary | 120 |
| | | 1,450 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | **Laboratory** | |
| 3 Work tables | | 1 Picture-phone |
| 9 Stools | | 1 TAV |
| 3 Large storage cabinets | | |
| | **Laboratory Supervisor's Office** | |
| 1 Desk | | |
| 2 Chairs | | |
| Shelving | | |
| Storage space | | |
| 2 Filing cabinets | | |
| | **One Seminar Room** | |
| 1 Table to seat 12 | | 1 TAVe |
| 12 Chairs | | 1 Picture-phone |
| | **Media Reception Room** | |
| 1 Table to seat 12 | | Large screen for simulation |
| 12 Chairs | | 1 TAVe |
| | | 1 Picture-phone |
| | **Conference Room** | |
| 3 Comfortable chairs | | 1 TAV |
| 1 Low coffee table | | |
| Book shelves | | |
| | **Three Faculty Offices** | |
| 3 Faculty desks | | 1 FTB with TAV availability in three offices |
| 3 Faculty desk chairs | | 3 Picture-phones |
| 6 Visitors' chairs | | |
| 9 File cabinets, built-in Shelving | | |
| | **Secretarial Office** | |
| 1 Secretary desk | | 1 Typewriter, electric |
| 1 Secretary chair | | 1 Picture-phone |
| 2 Visitors' chairs | | |
| 2 File cabinets | | |

SPECIAL EDUCATION AREA

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 400 |
| 2. | Media Reception Room | 250 |
| 3. | Student-Faculty Conference Room | 120 |
| 4. | Two Faculty Offices | 240 |
| 5. | Secretarial space for one secretary | 120 |
| | | 1,130 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Laboratory | |
| 2 Work tables | | 1 Picture-phone |
| 6 Stools | | 1 TAV |
| 2 Large storage cabinets | | |
| | Laboratory Supervisor's Office | |
| 1 Desk | | |
| 2 Chairs | | |
| Shelving | | |
| Storage space | | |
| 2 Filing cabinets | | |
| | Media Reception Room | |
| 1 Table to seat 12 | | Large screen for simulation |
| 12 Chairs | | 1 TAVe |
| | | 1 Picture-phone |
| | Conference Room | |
| 3 Comfortable chairs | | 1 TAV |
| 1 Low coffee table | | |
| Book shelves | | |
| | Two Faculty Offices | |
| 2 Faculty desks | | 1 FTB with TAV availability in two offices |
| 2 Faculty desk chairs | | |
| 4 Visitors' chairs | | 2 Picture-phones |
| 6 File cabinets, built-in | | |
| Shelving | | |
| | Secretarial Office | |
| 1 Secretary desk | | 1 Typewriter, electric |
| 1 Secretary chair | | 1 Picture-phone |
| 2 Visitors' chairs | | |
| 2 File cabinets | | |

HEALTH AREA

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 250 |
| 2. | Media Reception Room | 250 |
| 3. | Student-Faculty Conference Room | 120 |
| 4. | One Faculty Office | 120 |
| 5. | Secretarial space for one half-time secretary | 120 |
| | | 860 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Laboratory | |
| 1 Work table | | 1 Picture-phone |
| 3 Stools | | 1 TAV |
| 1 Large storage cabinet | | |
| | Laboratory Supervisor's Office | |
| 1 Desk | | |
| 2 Chairs | | |
| Shelving | | |
| Storage space | | |
| 2 Filing cabinets | | |
| | Media Reception Room | |
| 1 Table to seat 12 | | Large screen for simulation |
| 12 Chairs | | 1 TAVe |
| | | 1 Picture-phone |
| | Conference Room | |
| 3 Comfortable chairs | | 1 TAV |
| 1 Low coffee table | | |
| Book shelves | | |
| | One Faculty Office | |
| 1 Faculty desk | | 1 FTB with TAV availability |
| 1 Faculty desk chair | | 1 Picture-phone |
| 2 Visitors' chairs | | |
| 3 File cabinets, built-in | | |
| Shelving | | |
| | Secretarial Office | |
| 1 Secretary desk | | 1 Typewriter, electric |
| 1 Secretary chair | | 1 Picture-phone |
| 2 Visitors' chairs | | |
| 2 File cabinets | | |

SAFETY AREA

|  | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 250 |
| 2. | One seminar Room | 200 |
| 3. | Student-Faculty Conference Room | 120 |
| 4. | One Faculty Office | 120 |
| 5. | Secretarial space for one half-time secretary | 120 |
|  |  | 810 |

Equipment requirements include:

| General |  | Special |
|---|---|---|
|  | Laboratory |  |
| 1 Work table |  | 1 Picture-phone |
| 3 Stools |  | 1 TAV |
| 1 Large storage cabinet |  |  |
|  | Laboratory Supervisor's Office |  |
| 1 Desk |  |  |
| 2 Chairs |  |  |
| Shelving |  |  |
| Storage space |  |  |
| 2 Filing cabinets |  |  |
|  | One Seminar Room |  |
| 1 Table to seat 12 |  | 1 TAVe |
| 12 Chairs |  | 1 Picture-phone |
|  | Conference Room |  |
| 3 Comfortable chairs |  | 1 TAV |
| 1 Low coffee table |  |  |
| Book shelves |  |  |
|  | One Faculty Office |  |
| 1 Faculty desk |  | 1 FTB with TAV availability |
| 1 Faculty desk chair |  | 1 Picture-phone |
| 2 Visitors' chairs |  |  |
| 3 File cabinets, built-in |  |  |
| Shelving |  |  |
|  | Secretarial Office |  |
| 1 Secretary desk |  | 1 Typewriter, electric |
| 1 Secretary chair |  | 1 Picture-phone |
| 2 Visitors' chairs |  |  |
| 2 File cabinets |  |  |

## EDUCATIONAL PSYCHOLOGY AREA

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 400 |
| 2. | Two Seminar Rooms for 12 persons | 400 |
| 3. | Media Reception Room | 250 |
| 4. | Student-Faculty Conference Room | 120 |
| 5. | Five Faculty Offices | 600 |
| 6. | Secretarial space for two secretaries | 180 |
| | | 1,950 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Laboratory | |
| 2 Work tables | | 1 Picture-phone |
| 6 Stools | | 1 TAV |
| 2 Large storage cabinets | | |
| | Laboratory Supervisor's Office | |
| 1 Desk | | |
| 2 Chairs | | |
| Shelving | | |
| Storage space | | |
| 2 Filing cabinets | | |
| | Two Seminar Rooms | |
| 2 Tables to seat 12 | | 2 TAVe's |
| 24 Chairs | | 2 Picture-phones |
| | Media Reception Room | |
| 1 Table to seat 12 | | Large screen for simulation |
| 12 Chairs | | TAVe |
| | | 1 Picture-phone |
| | Conference Room | |
| 4 Comfortable chairs | | 1 TAV |
| 1 Low coffee table | | |
| Book shelves | | |
| | Five Faculty Offices | |
| 5 Faculty desks | | 2 FTBs with TAV availability in five offices |
| 5 Faculty desk chairs | | 5 Picture-phones |
| | Secretarial Office | |
| 2 Secretary desks | | 2 Typewriters, electric |
| 2 Secretary chairs | | 2 Picture-phones |
| 4 Visitors' chairs | | |
| 4 File cabinets | | |

## INTRODUCTION TO ELEMENTARY EDUCATION AREA

|  | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 250 |
| 2. | One Seminar Room | 200 |
| 3. | Media Reception Room | 250 |
| 4. | Student-Faculty Conference Room | 120 |
| 5. | Three Faculty Offices | 360 |
| 6. | Secretarial space for one secretary | 120 |
|  |  | 1,300 |

Equipment requirements include:

| General |  | Special |
|---|---|---|
| 2 Work tables<br>4 Stools<br>2 Large storage cabinets | Laboratory | 1 Picture-phone<br>1 TAV |
| 1 Desk<br>2 Chairs<br>Shelving<br>Storage space<br>2 Filing cabinets | Laboratory Supervisor's Office |  |
| 1 Table to seat 12<br>12 Chairs | One Seminar Room | 1 TAVe<br>1 Picture-phone |
| 1 Table to seat 12<br>12 Chairs | Media Reception Room | Large screen for simulation<br>TAVe<br>1 Picture-phone |
| 4 Comfortable chairs<br>1 Low coffee table<br>Book shelves | Conference Room | TAV |
| 3 Faculty desks<br>3 Faculty desk chairs<br>6 Visitors' chairs<br>9 File cabinets, built-in<br>Shelving | Three Faculty Offices | 1 FTB with TAV availability in 3 offices<br>3 Picture-phones |
| 1 Secretary desk<br>1 Secretary chair<br>2 Visitors' chairs<br>2 File cabinets | Secretarial Office | 1 Typewriter, electric<br>1 Picture-phone |

## STUDENT-FACULTY LOUNGE AREA

These areas are intended to provide an informal place, directly accessible to the LEARNING CENTER, where students may congregate and temporarily remove themselves from the learning activity.

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Utilitarian Lounge | 600 |
| 2. | Comfortable Lounge | 600 |
| | | 1,200 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Utilitarian Lounge | |
| 8 Tables to seat 4 | | 1 Soft drink machine |
| 32 Table chairs | | 1 Coffee machine |
| | | 100 1½ x 1½ ft. lockers |
| | Comfortable Lounge | |
| 5 Couches | | 6 Table lamps |
| 8 Comfortable chairs | | 15 Standing ash trays |
| 6 Lamp tables | | |
| 2 Coffee tables | | |

## CURRICULUM AND INSTRUCTION AREA

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Laboratory | 400 |
| 2. | One Seminar Room | 400 |
| 3. | Two Media Reception Rooms @ 250 Sq. Ft. | 500 |
| 4. | Two Student-Faculty Conference Rooms @ 120 Sq. Ft. | 240 |
| 5. | Seven Faculty Offices | 840 |
| 6. | Secretarial offices for two secretaries | 180 |
| 7. | Two Micro-teaching Studios | 800 |
| 8. | Space for Student Receptionist | 60 |
| 9. | Office for LABORATORY/CLINICAL Administrative Coordinator and three Administrative Assistants | 480 |
| 10. | Office for four part-time Supervisory Assistants | 240 |
| | | 4,140 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Laboratory | |
| 2 Work tables | | 1 Picture-phone |
| 4 Stools | | 1 TAV |
| 2 Large storage cabinets | | |
| | One Seminar Room | |
| 1 Table to seat 12 | | 1 TAVe |
| 12 Chairs | | 1 Picture-phone |
| | Two Media Reception Rooms | |
| 2 Tables to seat 12 | | 2 Large screens for simulation |
| 24 Chairs | | 2 TAVe's |
| | | 2 Picture-phones |
| | Two Conference Rooms | |
| 6 Comfortable chairs | | 2 TAV's |
| 2 Low coffee tables | | |
| Book shelves | | |
| | Seven Faculty Offices | |
| 7 Faculty desks | | 2 FTBs with TAV availability in seven offices |
| 7 Faculty desk chairs | | 7 Picture-phones |
| 14 Visitors' chairs | | |
| 21 File cabinets, built-in Shelving | | |
| | Secretarial Offices | |
| 2 Secretarial desks | | 2 Typewriters, electric |
| 2 Secretarial desk chairs | | 2 Picture-phones |
| 4 Visitors' chairs | | |
| 4 File cabinets | | |

| General | Special |
|---|---|
| **Two Micro-teaching Studios** | |
| 2 Demonstration tables | 4 Television cameras |
| 30 Chairs | 4 Television monitors |
| **Receptionist's Office** | |
| 1 Desk | 1 Picture-phone |
| 1 Desk chair | |
| 2 Visitors' chairs | |
| 1 File cabinet | |
| **Administrative Offices** | |
| 1 Desk for Administrative Coordinator | 1 FTB with TAV availability in four offices |
| 1 Desk chair | 4 Picture-phones |
| 2 Visitors' chairs | |
| 3 Desks for Administrative Assistants | |
| 3 Desk chairs | |
| 6 Visitors' chairs | |
| 6 File cabinets, built-in Shelving | |
| **Teaching Supervisors' Offices** | |
| 4 Supervisors' desks | 1 FTB with TAV availability in four offices |
| 4 Desk chairs | 4 Picture-phones |
| 8 Visitors' chairs | |
| 8 File cabinets | |

MEDIA PRODUCTION AREA

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Four Offices for Four Writer-Producer-Directors @ 120 Sq. Ft. | 480 |
| 2. | Two Offices for Two Graphic Artists @ 240 Sq. Ft. | 480 |
| 3. | Four Offices for Four Program Specialists @ 120 Sq. Ft. | 480 |
| 4. | Office for Technical Supervisor | 120 |
| 5. | Studio | 1,500 |
| 6. | Control Room | 140 |
| 7. | Videotape Recording, Editing, and Playback Room | 360 |
| 8. | Storage, Support and Ready Room | 600 |
| 9. | Shop | 600 |
| 10. | Conference and Preparation Room | 800 |
| | | 5,560 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Writer-Producer-Directors Office | |
| 4 Desks | | 1 TAV |
| 4 Desk chairs | | 2 Picture-phones |
| 4 *Filing cabinets* | | |
| Shelving | | |
| | Graphic Artists' Offices | |
| 2 Desks | | 1 TAV |
| 2 Desk chairs | | 1 Picture-phone |
| 2 Artists' easels | | 1 Dry mounting machine |
| 2 Stools | | 1 Lettering machine |
| 2 Filing cabinets | | |
| | Program Specialists' Offices | |
| 4 Desks | | 1 TAV |
| 4 Desk chairs | | 2 Picture-phones |
| 4 Filing cabinets | | |
| Shelving | | |
| | Technical Supervisor's Office | |
| 1 Desk | | 1 TAV |
| 1 Desk chair | | 1 Picture-phone |
| 1 Filing cabinet | | |
| Shelving | | |
| | Studio | |
| Draperies | | 3 Studio cameras--color, high resolution |
| Flats | | Lenses |
| 1 Couch | | Mounts |
| 2 Comfortable chairs | | Pedestals |
| Demonstration counter | | |

| General | | Special |
|---|---|---|
| Modular units | Studio (continued) | Microphones-large variety of stands and mounts<br>Lighting equipment - to accommodate color<br>Cyclorama<br>Rear projection--screen and projector |
| Console to handle audio standard complement--tape, disc, cassette inputs | Studio Control | Capability for 6 video inputs, including telecine and tape |
| Switching panel to handle distribution or combined inputs | Videotape Recording | 4 Helical scan recorder-playback units with electronic editing, color capability |
| 2 Large storage cabinets | Storage Room | |
| 2 Work benches<br>3 Stools | Soundproof Shop | Hand and power tools |
| 1 Table to seat 12<br>12 Chairs | Conference and Preparation Room | 1 TAVe<br>1 Picture-phone |

## PROGRAM REVISION AND DEVELOPMENT CENTER

Responsibility for the work of this Center rests entirely with the members of the WETEP faculty. Much of its direction will come from the faculty offices.

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Office for Coordinator of the Center | 120 |
| 2. | Conference Room | 120 |
| 3. | Work Space for Thirty Half-time Graduate Assistants | 600 |
| 4. | Space for Four Clerical Workers | 240 |
| 5. | Work Space for Two Artists | 180 |
| 6. | Work Space for Two Systems Technicians | 240 |
| | | 1,500 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Coordinator's Office | |
| 1 Desk | | 1 TAV |
| 1 Desk chair | | 1 Picture-phone |
| 2 Visitors' chairs | | |
| 2 Filing cabinets | | |
| Shelving | | |
| | Conference Room | |
| 1 Table to seat 4 | | 1 TAV |
| 4 Conference chairs | | 1 Picture-phone |
| | Graduate Room | |
| 30 Desks | | 2 FTBs with 8 TAV's |
| 30 Desk chairs | | |
| Shelving | | |
| | Clerical Offices | |
| 4 Desks | | 4 Typewriters, electric |
| 4 Desk chairs | | 2 Picture-phones |
| 4 Filing cabinets | | |
| Shelving | | |
| | Artists' Space | |
| 2 Desks | | 2 Easels |
| 2 Desk chairs | | 1 Picture-phone |
| | Systems Technicians' Space | |
| 2 Work tables for flow-charting | | 1 Picture-phone |
| 2 Chairs | | |

## RESEARCH AND ASSESSMENT CENTER

Space requirements include:

| | | Sq. Ft. |
|---|---|---|
| 1. | Office of Coordinator,<br>Assistant for Theoretical Development<br>Assistant for Applied Assessment | 360 |
| 2. | Offices for Two Clerical Assistants | 180 |
| 3. | Space for Ten Additional Personnel | 600 |
| 4. | Office for Research Design Specialist | 120 |
| 5. | Office for Statistical Consultant | 90 |
| 6. | Work Space for Ten Half-time Staff Members | 600 |
| | | 1,950 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| 3 Desks<br>3 Desk chairs<br>6 Visitors' chairs<br>6 Filing cabinets<br>Shelving | Coordinator's Office | 1 FTB with TAV availability for 3 offices<br>3 Picture-phones |
| 2 Desks<br>2 Desk chairs<br>4 Filing cabinets | Two Clerical Assistants | 1 Picture-phone |
| 10 Desks<br>10 Desk chairs | Ten Additional Personnel | 1 FTB with 4 TAV's<br>2 Picture-phones |
| 1 Desk<br>1 Desk chair<br>1 Visitor chair<br>2 Filing cabinets<br>Shelving | Office for Research Design Specialist | 1 TAV |
| 1 Desk<br>1 Desk chair<br>1 Visitor chair<br>2 Filing cabinets<br>Shelving | Office for Statistical Consultant | 1 TAV<br>1 Picture-phone |
| 10 Desks<br>10 Desk chairs | Work Space for Ten Half-time Staff Members | 1 FTB with 4 TAV's<br>2 Picture-phones |

## COMPUTER SERVICES AREA

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Office for the Coordinator of Computer Services | 120 |
| 2. | Secretarial Office | 120 |
| 3. | Computer Control Area | 1,620 |
| 4. | Work Space for Programmers, Coders, Technicians | 480 |
| 5. | Student-Faculty Course-writing Area | 240 |
| 6. | Offices for Two Computer-Consultants | 180 |
| 7. | Service Area | 120 |
| | | 2,880 |

Equipment requirements include:

| General | | Special |
|---|---|---|
| | Coordinator's Office | |
| 1 Desk | | 1 TAV |
| 1 Desk chair | | 1 Picture-phone |
| 2 Visitors chairs | | |
| 2 Filing cabinets | | |
| Shelving | | |
| | Secretary's Office | |
| 1 Desk | | 1 Typewriter, electric |
| 1 Desk chair | | 1 Picture-phone |
| 1 Visitor's chair | | |
| 2 Filing cabinets | | |
| Shelving | | |
| | Computer Control | |
| 5 Chairs | | 5 Computer terminals |
| | | 1 Central processing unit |
| | | 2 Magnetic tape units |
| | | 1 Mass storage unit |
| | | 1 Drum memory unit |
| | | 2 Disc storage units |
| | | 1 Tape controller |
| | | 1 Random access controller |
| | | 1 Communications control multichannel |
| | | 1 Hi-speed printer |
| | | 1 M.I.C.R. controller |
| | | 1 Card punch |
| | | 1 Card reader |
| | | 1 Digital plotter |
| | Work Space | |
| 6 Work desks | | |
| 6 Desk chairs | | |

| General | | Special |
|---|---|---|
| | Course-writing Area | |
| 3 Large work tables | | 1 TAV |
| 6 Chairs | | |
| | Two Consultants' Offices | |
| 2 Desks | | 2 Picture-phones |
| 2 Desk chairs | | |
| 4 Visitors' chairs | | |
| Shelving | | |
| | Service Area | |
| 2 Work benches | | 1 Tool board |
| 4 Stools | | |

## DIAL-ACCESS STORAGE AND RETRIEVAL CENTER

|  | Space requirements include | Sq. Ft. |
|---|---|---|
| 1. | Three Staff Offices | 360 |
| 2. | Offices for Two Clerical Assistants | 220 |
| 3. | Control Center | 2,500 |
| 4. | Audio and Videotape Duplicating Rooms | 200 |
| 5. | Storage Space: 2500 Videotapes or Films, 5000 Audiotapes | 700 |
| 6. | Four Desks for Graduate Assistants | 240 |
|  |  | 4,220 |

Equipment requirements include:

### Three Staff Offices

| General | Special |
|---|---|
| 1 Desk for Storage and Retrieval Technician | 1 FTB with TAV availability in 3 offices |
| 1 Desk chair | 3 Picture-phones |
| 1 Desk for Technical Assistant for audio |  |
| 1 Desk chair |  |
| 1 Desk for Technical Assistant for video |  |
| 1 Desk chair |  |
| 3 Filing cabinets |  |
| Shelving |  |

### Two Clerical Assistants Offices

| General | Special |
|---|---|
| 2 Desk |  |
| 2 Desk chairs |  |

### Control Center

| General | Special |
|---|---|
| 25 Transmission islands | 25 Television cameras |
| 25 Stools | 25 Slide projectors |
|  | 25 Film projectors |
|  | 25 Tape recorders (video) |
|  | 25 Tape recorders (audio) |

### Duplication Room

| General | Special |
|---|---|
| 2 Stools | 4 Videotape recorders |
|  | 4 Audiotape recorders |

### Film/Tape Storage

| General | Special |
|---|---|
| Shelving (240 Sq. Ft.) |  |

### Graduate Assistants' Space

| General | Special |
|---|---|
| 4 Desks | 1 TAV |
| 4 Desk chairs | 1 Picture-phone |

## TECHNOLOGICAL MAINTENANCE, RESEARCH, AND EVALUATION CENTER

This section should be as close as possible to the media production and the dial-access control rooms, for speeding repair service, and for minimizing the distance large equipment must be moved. For this latter reason, this maintenance area should be near the elevators.

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Office for a Maintenance Technician. Storage space for catalogs and equipment, supplies, materials, a small library of texts related to instructional technology, diagrams for wiring of all equipment, and blueprints associated with space and technological installation and maintenance. | 180 |
| 2. | Secretarial office. | 90 |
| 3. | Conference Room for three to four persons | 150 |
| 4. | Workshop area, separated by sound-proof walls; space for six Technicians; benches, space for test equipment; space for technological items brought in for repair and maintenance work. | 600 |
| 5. | Desk space for three Technicians to direct the development of technological innovations. Facilities for testing equipment; workshop with tools | 300 |
| | | 1,320 |

Equipment requirements include:

| General | Special |
|---|---|
| **Maintenance Technician's Office** | |
| 1 Technician's desk | 1 TAV |
| 1 Desk chair | 1 Picture-phone |
| 3 Filing cabinets | |
| Shelving | |
| **Secretarial Office** | |
| 1 Secretary's desk | 1 Picture-phone |
| 1 Desk chair | |
| 2 Visitors' chairs | |
| 2 Filing cabinets | |
| Shelving | |
| **Conference Room** | |
| 1 Conference table to seat 4 | 1 TAV |
| 4 Conference chairs | 1 Picture-phone |

| General | | Special |
|---|---|---|
| | Workshop | |
| 3 Large work benches | | 3 TV monitors for checking the system |
| 6 Technicians' desks | | 1 Toolboard |
| 6 Desk chairs | | |
| 3 Filing cabinets | | |
| Shelving | | |
| | Technological Innovations Office | |
| 3 Technicians' desks | | 1 TV monitor |
| 3 Desk chairs | | 1 Toolboard |
| 1 Work bench | | |
| 3 Stools | | |
| 3 Filing cabinets | | |
| Shelving | | |

STUDENT PERSONNEL CENTER

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Reception Area | 90 |
| 2. | Office of Advisor for Student Personnel | 120 |
| 3. | Two Offices for Full-time Clerical Assistants | 180 |
| 4. | Three Offices for Student Counselors | 360 |
| | | 750 |

Equipment requirements include:

| General | Special |
|---|---|
| **Reception Area** | |
| 4 Reception room chairs | |
| **Office of Advisor for Students** | |
| 1 Desk | 1 TAV |
| 1 Desk chair | 1 Picture-phone |
| 2 Visitors' chairs | |
| 2 Filing cabinets | |
| Shelving | |
| **Two Offices for Clerical Assistants** | |
| 2 Desks | 1 TAV |
| 2 Desk chairs | 2 Picture-phones |
| 2 Visitors' chairs | |
| 2 Filing cabinets | |
| Shelving | |
| **Three Offices for Student Counselors** | |
| 3 Desks | 1 FTB with TAV access to computerized student records in 3 offices |
| 3 Desk chairs | |
| 6 Visitors' chairs | |
| 6 Filing cabinets | |
| Shelving | |

## VISITOR RECEPTION AREA

| Space requirements include: | Sq. Ft. |
|---|---|
| 1. Reception Area | 180 |
| 2. Auditorium to seat 40 | 360 |
| 3. Restrooms | 200 |
| | 740 |

Equipment requirements include:

| General | Special |
|---|---|
| **Reception Area** | |
| 1 Receptionist's desk | 1 Picture-phone |
| 1 Receptionist's chair | 1 Typewriter, electric |
| 1 Desk for Public Information Graduate Assistant | 2 Table lamps |
| 1 Chair | |
| 4 Comfortable chairs | |
| 2 Comfortable couches | |
| 2 Lamp tables | |
| **Auditorium** | |
| 40 Auditorium seats | Simulation screens |
| 1 Lectern | 1 TAVe |
| | 2 Picture-phones |

WETEP ADMINISTRATION

| | Space requirements include: | Sq. Ft. |
|---|---|---|
| 1. | Reception area | 200 |
| 2. | Offices for Director of WETEP and Administrative Assistant | 240 |
| 3. | Offices for Coordinator of Instruction and Administrative Assistant | 240 |
| 4. | Offices for Coordinator of Development and Research and Administrative Assistant | 240 |
| 5. | Offices for Business Manager, Administrative Assistant, Assistant for the Budget, and Assistant for Administrative Relations with Local Schools | 450 |
| 6. | Secretarial Office for Four Full-time Secretaries | 360 |
| 7. | Faculty Conference Room to Accommodate 25-35 Persons | 250 |
| | | 1,980 |

Equipment requirements include:

| General | Special |
|---|---|
| Reception Room | |
| 4 Comfortable chairs<br>2 Lamp tables | 2 Table lamps |
| Two Offices: Director of WETEP and Administrative Assistant | |
| 2 Desk<br>2 Desk chairs<br>4 Visitors' chairs<br>4 Filing cabinets<br>Shelving | 1 TAV<br>2 Picture-phones |
| Two Offices: Coordinator of Instruction and Administrative Assistant | |
| 2 Desks<br>2 Desk chairs<br>4 Visitors' chairs<br>4 Filing cabinets<br>Shelving | 1 TAV<br>2 Picture-phones |
| Two Offices: Coordinator of Development and Research and Administrative Assistant | |
| 2 Desks<br>2 Desk chairs<br>4 Visitors' chairs<br>4 Filing cabinets<br>Shelving | 1 TAV<br>2 Picture-phones |

| General | Special |
|---|---|
| Four Offices: Business Manager, Administrative Assistant, Assistant for the Budget, Assistant for Administrative Relations with Local Schools | |
| 4 Desks | 1 FTB with TAV availability to four offices |
| 4 Desk chairs | 4 Picture-phones |
| 8 Visitors' chairs | |
| 8 Filing cabinets | |
| Shelving | |
| One Office: Four Secretaries | |
| 4 Secretarial desks | 4 Typewriter, electric |
| 4 Desk chairs | 4 Picture-phones |
| 4 Visitors' chairs | |
| 8 Filing cabinets | |
| Conference Room | |
| 1 Conference table to seat 30 | 1 TAVe |
| 30 Conference chairs | 1 Picture-phone |

## SUMMARY OF SPACE REQUIREMENTS

| | |
|---|---|
| Instructional Program Space | |
| A. Learning Center and Laboratories | 11,250 |
| B. Seminar & Media Reception Rooms | 5,900 |
| C. Conference Rooms | 2,730 |
| D. Faculty Offices | 4,920 |
| Staff Offices | |
| E. Supporting | 2,940 |
| F. Clerical | 2,560 |
| G. Administration | 1,650 |
| H. Work Space | 10,100 |
| N. Student-Faculty Lounge | 1,200 |
| | 43,540 |
| Development and Research Space | |
| I. Administrative Offices | 480 |
| J. Supporting Staff | 1,110 |
| K. Clerical Staff | 510 |
| L. Conference Space | 270 |
| M. Work Space | 2,400 |
| O. Auditorium | 360 |
| Q. Reception (Visitors) | 180 |
| | 5,310 |
| Total space | 48,850 |

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